



Allen-Bradley

PowerFlex
700

**Adjustable
Frequency AC
Drive**

User Manual

www.abpowerflex.com

**Rockwell
Automation**

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. “*Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls*” (Publication SGI-1.1 available from your local Allen-Bradley Sales Office or online at <http://www.ab.com/manuals/gi>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will the Allen-Bradley Company be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, the Allen-Bradley Company cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Allen-Bradley Company with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of the Allen-Bradley Company is prohibited.

Throughout this manual we use notes to make you aware of safety considerations.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

Attentions help you:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is especially important for successful application and understanding of the product.



Shock Hazard labels may be located on or inside the drive to alert people that dangerous voltage may be present.

DriveExplorer, DriveTools32, and SCANport are trademarks of Rockwell Automation.

PLC is a registered trademark of Rockwell Automation.

ControlNet is a trademark of ControlNet International, Ltd.

DeviceNet is a trademark of the Open DeviceNet Vendor Association.

Table of Contents

Preface	Overview	Who Should Use this Manual? P-1 What Is Not in this Manual P-1 Reference Materials P-2 Manual Conventions P-2 Drive Frame Sizes P-3 General Precautions P-3 Catalog Number Explanation P-4	
Chapter 1	Installation/Wiring	Opening the Cover 1-1 Minimum Mounting Clearances 1-2 AC Supply Source Considerations 1-2 General Grounding Requirements 1-3 Fuses and Circuit Breakers 1-4 Power Wiring 1-5 Standard I/O Wiring 1-8 Speed Reference Control 1-13 Auto/Manual Examples 1-14 Disconnecting MOVs and CM Capacitors 1-15 EMC Instructions 1-16	
Chapter 2	Start Up	Prepare For Drive Start-Up 2-1 Status Indicators 2-2 Start-Up Routines 2-3 Running S.M.A.R.T. Start 2-4 Running an Assisted Start Up 2-4	
Chapter 3	Programming and Parameters	About Parameters 3-1 How Parameters are Organized 3-3 Monitor File 3-8 Motor Control File 3-9 Speed Command File 3-12 Dynamic Control File 3-18 Utility File 3-22 Communication File 3-31 Inputs & Outputs File 3-35 Parameter Cross Reference – by Name . . 3-39 Parameter Cross Reference – by Number 3-41	
Chapter 4	Troubleshooting	Faults and Alarms 4-1 Drive Status 4-2 Manually Clearing Faults 4-3 Fault Descriptions 4-4 Clearing Alarms 4-7 Alarm Descriptions 4-8 Testpoint Codes and Functions 4-10 Common Symptoms/Corrective Actions 4-10	
Appendix A	Supplemental Info	Output Devices A-1 Drive, Fuse & Circuit Breaker Ratings . . A-1	
Appendix B	HIM Overview	External and Internal Connections B-1 LCD Display Elements B-2 ALT Functions B-2 Menu Structure B-3 Viewing and Editing Parameters B-5 Removing the HIM B-6	

Notes:

Overview

The purpose of this manual is to provide you with the basic information needed to install, start-up and troubleshoot the PowerFlex 700 Adjustable Frequency AC Drive.

For information on . . .	See page . . .
Who Should Use this Manual?	P-1
What Is Not in this Manual	P-1
Reference Materials	P-2
Manual Conventions	P-2
Drive Frame Sizes	P-3
General Precautions	P-3
Catalog Number Explanation	P-4

Who Should Use this Manual?

This manual is intended for qualified personnel. You must be able to program and operate Adjustable Frequency AC Drive devices. In addition, you must have an understanding of the parameter settings and functions.

What Is Not in this Manual

Since this *User Manual* is designed to provide only basic start-up information, the following topics have not been included:

- Specifications
- Mounting Dimensions
- Spare Parts Information

Please refer to the *PowerFlex Reference Manual* for detailed drive information. The reference manual is included on the CD supplied with your drive or is also available online at <http://www.ab.com/manuals>.

Reference Materials

The following manuals are recommended for general drive information:

Title	Publication	Available Online at . . .
Industrial Automation Wiring and Grounding Guidelines	1770-4.1	(1)
Preventive Maintenance of Industrial Control and Drive System Equipment	DRIVES-SB001A-EN-E	www.ab.com/manuals/dr
Safety Guidelines for the Application, Installation and Maintenance of Solid State Control	SGI-1.1	www.ab.com/manuals/gi
A Global Reference Guide for Reading Schematic Diagrams	0100-2.10	(1)
Guarding Against Electrostatic Damage	8000-4.5.2	www.ab.com/manuals/gi

(1) Not available online, contact your local Allen-Bradley Sales Office.

For detailed PowerFlex 700 information including mounting dimensions and specifications:

Title	Publication	Available . . .
PowerFlex Reference Manual	PFLEX-RM001A-EN-E	on the CD supplied with the drive or at www.ab.com/manuals/dr

Manual Conventions

- In this manual we refer to the PowerFlex 700 Adjustable Frequency AC Drive as; drive, PowerFlex 700 or PowerFlex 700 Drive.
- To help differentiate parameter names and LCD display text from other text, the following conventions will be used:
 - Parameter Names will appear in [brackets].
For example: [DC Bus Voltage].
 - Display Text will appear in “quotes.” For example: “Enabled.”
- The following words are used throughout the manual to describe an action:

Word	Meaning
Can	Possible, able to do something
Cannot	Not possible, not able to do something
May	Permitted, allowed
Must	Unavoidable, you must do this
Shall	Required and necessary
Should	Recommended
Should Not	Not recommended

Drive Frame Sizes

Similar PowerFlex 700 drive sizes are grouped into frame sizes to simplify spare parts ordering, dimensioning, etc. A cross reference of drive catalog numbers and their respective frame size is provided in [Appendix A](#).

General Precautions



ATTENTION: This drive contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference A-B publication 8000-4.5.2, “Guarding Against Electrostatic Damage” or any other applicable ESD protection handbook.



ATTENTION: An incorrectly applied or installed drive can result in component damage or a reduction in product life. Wiring or application errors, such as, undersizing the motor, incorrect or inadequate AC supply, or excessive ambient temperatures may result in malfunction of the system.



ATTENTION: Only qualified personnel familiar with adjustable frequency AC drives and associated machinery should plan or implement the installation, start-up and subsequent maintenance of the system. Failure to comply may result in personal injury and/or equipment damage.



ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before performing any work on the drive. Measure the DC bus voltage at the +DC & –DC terminals of the Power Terminal Block (refer to [Chapter 1](#) for location). The voltage must be zero.



ATTENTION: Risk of injury or equipment damage exists. DPI or SCANport host products must not be directly connected together via 1202 cables. Unpredictable behavior can result if two or more devices are connected in this manner.



ATTENTION: The “adjust freq” portion of the bus regulator function is extremely useful for preventing nuisance overvoltage faults resulting from aggressive decelerations, overhauling loads, and eccentric loads. It forces the output frequency to be greater than commanded frequency while the drive's bus voltage is increasing towards levels that would otherwise cause a fault; however, it can also cause either of the following two conditions to occur.

1. Fast positive changes in input voltage (more than a 10% increase within 6 minutes) can cause uncommanded positive speed changes; however an “OverSpeed Limit” fault will occur if the speed reaches [Max Speed] + [Overspeed Limit]. If this condition is unacceptable, action should be taken to 1) limit supply voltages within the specification of the drive and, 2) limit fast positive input voltage changes to less than 10%. Without taking such actions, if this operation is unacceptable, the “adjust freq” portion of the bus regulator function must be disabled (see parameters 161 and 162).

2. Actual deceleration times can be longer than commanded deceleration times; however, a “Decel Inhibit” fault is generated if the drive stops decelerating altogether. If this condition is unacceptable, the “adjust freq” portion of the bus regulator must be disabled (see parameters 161 and 162). In addition, installing a properly sized dynamic brake resistor will provide equal or better performance in most cases.

Note: These faults are not instantaneous and have shown test results that take between 2 and 12 seconds to occur.

Catalog Number Explanation

The PowerFlex 700 catalog numbering scheme is shown on page [P-5](#).

Catalog Number Explanation

20B	D	2P1	A	3	A	N	N	A	R	A	0
Drive	Voltage Rating	Rating	Enclosure	HIM	Documentation	Brake	Brake Resistor	Emission	Comm Slot	I/O	Feedback

Code Type

20B	700
20A	70

Code Type

A	User Manual
N	No Manual

Code Rating

A	Filtered
N	Not Filtered

Code Type

0	None
1	Standard Encoder

Code Voltage Ph. Type⁽²⁾

B	240V AC	3	SA
C	400V AC	3	SA
D	480V AC	3	SA
E	600V AC	3	SA
F	690V AC	3	SA

Code w/Resistor

Y	Yes
N	No

Code	I/O	I/O Volts
A	Std.	24V DC/AC
B	Std.	120V AC

Code Operator Interface

0	Blank Cover
2	Digital LCD
3	Full Numeric LCD
4	Analog LCD
5	Prog. Only LCD

Code w/Brake IGBT

Y	Yes
N	No

Code Enclosure

A	IP 20 (NEMA Type 1)
---	---------------------

Code Version

D	DeviceNet
R	RIO
C	ControlNet - Coax
F	ControlNet - Fiber
S	RS485, DF-1
H	RS485 HVAC
P	Profibus DPV1
I	Interbus
L	LonWorks
E	Ethernet
N	N/A

Code Amps HP⁽¹⁾

1P1	1.1	0.5
2P1	2.1	1.0
3P4	3.4	2.0
005	5	3.0
008	8	5.0
011	11	7.5
014	14	10
022	22	15

Same method up to 999A. See example below for 1000 & Up

1K2	1200	940
-----	------	-----

⁽¹⁾ Output current at 480V AC, 60 Hz input.

⁽²⁾ SA=Standalone drive w/AC input. CB=Common bus drive w/DC input.

Installation/Wiring

This chapter provides information on mounting and wiring the PowerFlex 700 Drive.

For information on . .	See page	For information on . .	See page
Opening the Cover	1-1	Standard I/O Wiring	1-8
Minimum Mounting Clearances	1-2	Speed Reference Control	1-13
AC Supply Source Considerations	1-2	Auto/Manual Examples	1-14
General Grounding Requirements	1-3	Disconnecting MOVs and Common Mode Capacitors	1-15
Fuses and Circuit Breakers	1-4	EMC Instructions	1-16
Power Wiring	1-5		

Most start-up difficulties are the result of incorrect wiring. Every precaution must be taken to assure that the wiring is done as instructed. All items must be read and understood before the actual installation begins.



ATTENTION: The following information is merely a guide for proper installation. The Allen-Bradley Company cannot assume responsibility for the compliance or the noncompliance to any code, national, local or otherwise for the proper installation of this drive or associated equipment. A hazard of personal injury and/or equipment damage exists if codes are ignored during installation.

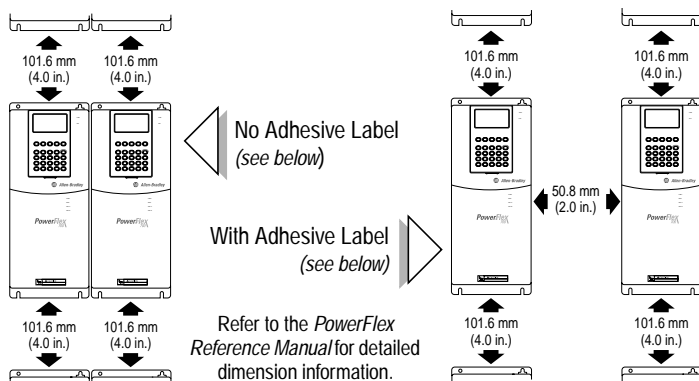
Opening the Cover



Locate the slot in the upper left corner of the drive. Slide the locking tab up and swing the cover open.

Special hinges allow cover to move away from drive and lay on top of adjacent drive (if present).

Minimum Mounting Clearances



Ambient Operating Temperatures

PowerFlex 700 drives are designed to operate at 0° to 40° C ambient. To operate the drive in installations between 41° and 50° C ambient, remove the adhesive label affixed to the top of the drive enclosure.

Important: Removing the adhesive label from the drive changes the NEMA enclosure rating from Type 1 to Open type.

AC Supply Source Considerations

PowerFlex 700 drives are suitable for use on a circuit capable of delivering up to a maximum of 200,000 rms symmetrical amperes, and a maximum of 600 volts.



ATTENTION: To guard against personal injury and/or equipment damage caused by improper fusing or circuit breaker selection, use only the recommended line fuses/circuit breakers specified in [Appendix A](#).

If a system ground fault monitor (RCD) is to be used, only Type B (adjustable) devices should be used to avoid nuisance tripping.

Unbalanced or Ungrounded Distribution Systems

If phase to ground voltage will exceed 125% of normal line to line voltage or the supply system is ungrounded, refer to the *PowerFlex Reference Manual*.



ATTENTION: PowerFlex 700 drives contain protective MOVs and common mode capacitors that are referenced to ground. These devices should be disconnected if the drive is installed on an ungrounded distribution system. See page [1-15](#) for jumper locations.

Input Power Conditioning

If any of the following conditions exist, refer to the *PowerFlex Reference Manual*.

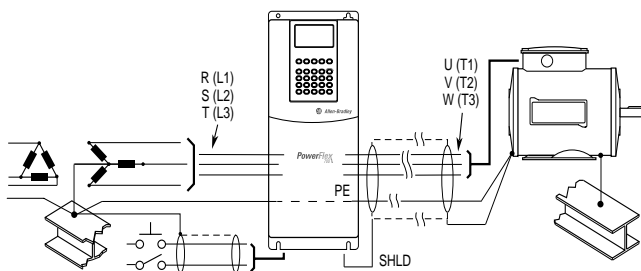
- Frequent power outages.
- Ungrounded AC supply source.
- Facility has power factor correction capacitors.
- Input voltage variations that:
 - Exceed drive operating specifications.
 - Cause rapid increases in drive bus voltage (also see Attention statement on page [P-4](#)).

General Grounding Requirements

The drive Safety Ground - PE must be connected to system ground. Ground impedance must conform to the requirements of national and local industrial safety regulations and/or electrical codes. The integrity of all ground connections should be periodically checked.

For installations within a cabinet, a single safety ground point or ground bus bar connected directly to building steel should be used. All circuits including the AC input ground conductor should be grounded independently and directly to this point/bar.

Figure 1.1 Typical Grounding



Safety Ground - PE

This is the safety ground for the drive that is required by code. This point must be connected to adjacent building steel (girder, joist), a floor ground rod or bus bar (see above). Grounding points must comply with national and local industrial safety regulations and/or electrical codes.

Shield Termination - SHLD

The Shield terminal (see [Figure 1.2 on page 1-7](#)) provides a grounding point for the motor cable shield. It must be connected to an earth ground by a separate continuous lead. The **motor cable** shield should be connected to this terminal on the drive (drive end) and the motor frame (motor end). A shield terminating cable gland may also be used.

When shielded cable is used for **control and signal wiring**, the shield should be grounded at the source end only, not at the drive end.

RFI Filter Grounding

Using an optional RFI filter may result in relatively high ground leakage currents. Therefore, the **filter must only be used in installations with grounded AC supply systems and be permanently installed and solidly grounded** (bonded) to the building power distribution ground. Ensure that the incoming supply neutral is solidly connected (bonded) to the same building power distribution ground. Grounding must not rely on flexible cables and should not include any form of plug or socket that would permit inadvertent disconnection. Some local codes may require redundant ground connections. The integrity of all connections should be periodically checked. Refer to the instructions supplied with the filter.

Fuses and Circuit Breakers

The PowerFlex 700 can be installed with either input fuses or an input circuit breaker. National and local industrial safety regulations and/or electrical codes may determine additional requirements for these installations. Refer to [Appendix A](#) for recommended fuses/circuit breakers.



ATTENTION: The PowerFlex 700 does not provide branch short circuit protection. Specifications for the recommended fuse or circuit breaker to provide protection against short circuits are provided in [Appendix A](#).

Power Wiring



ATTENTION: National Codes and standards (NEC, VDE, BSI etc.) and local codes outline provisions for safely installing electrical equipment. Installation must comply with specifications regarding wire types, conductor sizes, branch circuit protection and disconnect devices. Failure to do so may result in personal injury and/or equipment damage.

Cable Types Acceptable for 200-600 Volt Installations

General

A variety of cable types are acceptable for drive installations. For many installations, unshielded cable is adequate, provided it can be separated from sensitive circuits. As an approximate guide, allow a spacing of 0.3 meters (1 foot) for every 10 meters (32.8 feet) of length. In all cases, long parallel runs must be avoided. Do not use cable with an insulation thickness less than or equal to 15 mils (0.4mm/0.015 in.). See [Table 1.A](#).

Unshielded

THHN, THWN or similar wire is acceptable for drive installation in dry environments provided adequate free air space and/or conduit fill rates limits are provided. **Do not use THHN or similarly coated wire in wet areas.** Any wire chosen must have a minimum insulation thickness of 15 Mils and should not have large variations in insulation concentricity.

Shielded/Armored Cable

Shielded cable is recommended if sensitive circuits or devices are connected or mounted to the machinery driven by the motor.

Table 1.A Recommended Shielded Wire

Location	Rating/Type	Description
Standard (Option 1)	600V, 90° C (194° F) XHHW2/RHW-2 Anixter B209500-B209507, Belden 29501-29507, or equivalent	<ul style="list-style-type: none">• Four tinned copper conductors with XLP insulation.• Copper braid/aluminum foil combination shield and tinned copper drain wire.• PVC jacket.
Standard (Option 2)	Tray rated 600V, 90° C (194° F) RHH/RHW-2 Anixter OLF-7xxxxx or equivalent	<ul style="list-style-type: none">• Three tinned copper conductors with XLPE insulation.• 5 mil single helical copper tape (25% overlap min.) with three bare copper grounds in contact with shield.• PVC jacket.
Class I & II; Division I & II	Tray rated 600V, 90° C (194° F) RHH/RHW-2 Anixter 7V-7xxxx-3G or equivalent	<ul style="list-style-type: none">• Three bare copper conductors with XLPE insulation and impervious corrugated continuously welded aluminum armor.• Black sunlight resistant PVC jacket overall.• Three copper grounds on #10 AWG and smaller.

EMC Compliance

Refer to [EMC Instructions on page 1-16](#) for details.

Cable Trays and Conduit

If cable trays or large conduits are to be used, refer to guidelines presented in the *PowerFlex Reference Manual*.



ATTENTION: To avoid a possible shock hazard caused by induced voltages, unused wires in the conduit must be grounded at both ends. For the same reason, if a drive sharing a conduit is being serviced or installed, all drives using this conduit should be disabled. This will help minimize the possible shock hazard from “cross coupled” motor leads.

Motor Cable Lengths

Typically, motor lead lengths less than 91 meters (300 feet) are acceptable. However, if your application dictates longer lengths, refer to the *PowerFlex Reference Manual* for details.

Power Terminal Block

[Figure 1.2](#) shows the typical location of the Power Terminal Block.

Cable Entry Plate Removal

If additional wiring access is needed, the Cable Entry Plate on 0-3 Frame drives can be removed. Simply loosen the screws securing the plate to the chassis. The slotted mounting holes assure easy removal.

Important: Removing the Cable Entry Plate limits the maximum ambient temperature to 40 degrees C (104 degrees F).

Access Panel Removal

3 Frame drives utilize a panel/cover over the power wiring terminals. To remove, simply slide it down and out. Replace the cover when wiring is complete.

Figure 1.2 Typical Power Terminal Block Location

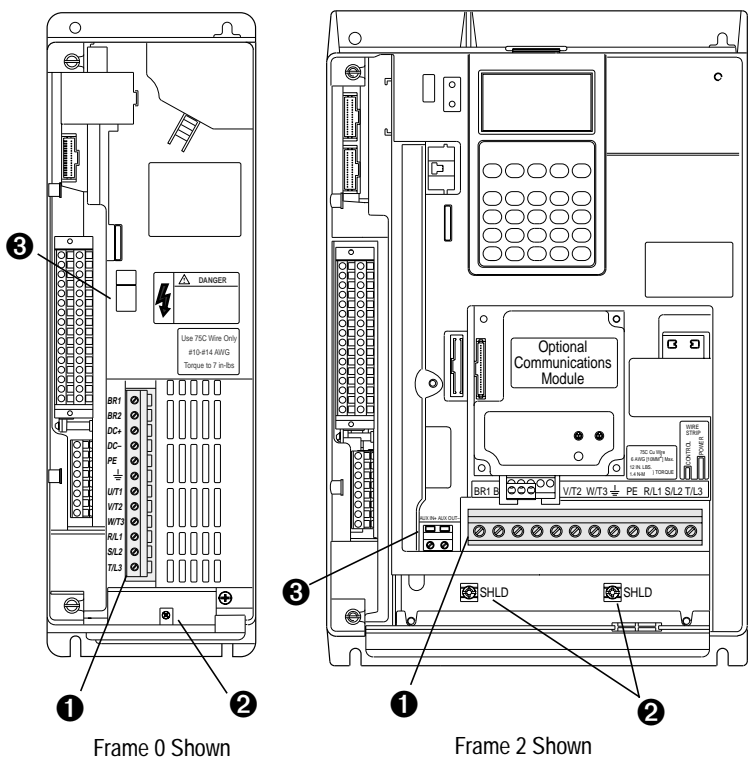
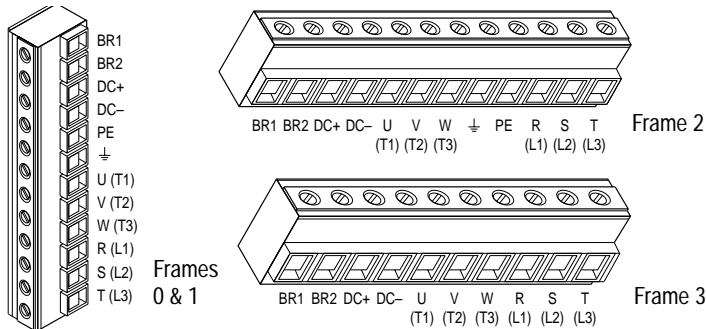


Table 1.B Power Terminal Block Specifications

No.	Name	Frame	Description	Wire Size Range ⁽¹⁾		Torque	
				Maximum	Minimum	Maximum	Recommended
1	Power Terminal Block	0 & 1	Input power and motor connections	5.3 mm ² (10 AWG)	0.4 mm ² (22 AWG)	1.7 N-m (15 lb.-in.)	0.8 N-m (7 lb.-in.)
		2	Input power and motor connections	10.0 mm ² (6 AWG)	0.8 mm ² (18 AWG)	1.7 N-m (15 lb.-in.)	1.4 N-m (12 lb.-in.)
		3	Input power and motor connections	25.0 mm ² (3 AWG)	2.1 mm ² (14 AWG)	3.6 N-m (32 lb.-in.)	1.8 N-m (16 lb.-in.)
			BR1, 2 terminals	10.0 mm ² (6 AWG)	0.8 mm ² (18 AWG)	1.7 N-m (15 lb.-in.)	1.4 N-m (12 lb.-in.)
2	SHLD Terminal	All	Terminating point for wiring shields	—	—	1.6 N-m (14 lb.-in.)	1.6 N-m (14 lb.-in.)
3	AUX Terminal Block	All	Auxiliary Control Voltage	—	—	—	—

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

Figure 1.3 Power Terminal Block



Terminal	Description	Notes
BR1	DC Brake (+)	Dynamic Brake Resistor Connection (+)
BR2	DC Brake (-)	Dynamic Brake Resistor Connection (-)
DC+	DC Bus (+)	
DC-	DC Bus (-)	
PE	PE Ground	Located elsewhere on 3 Frame drives
⏏	Motor Ground	Located elsewhere on 3 Frame drives
U	U (T1)	To motor
V	V (T2)	To motor
W	W (T3)	To motor
R	R (L1)	AC Line Input Power
S	S (L2)	AC Line Input Power
T	T (L3)	AC Line Input Power

Standard I/O Wiring

Motor Start/Stop Precautions



ATTENTION: A contactor or other device that routinely disconnects and reapplies the AC line to the drive to start and stop the motor can cause drive hardware damage. The drive is designed to use control input signals that will start and stop the motor. If an input device is used occasionally, an auxiliary contact on that device should also be wired to a digital input programmed as a “Enable” function. The input device must not exceed one operation per minute or drive damage will occur.



ATTENTION: The drive start/stop control circuitry includes solid-state components. If hazards due to accidental contact with moving machinery or unintentional flow of liquid, gas or solids exist, an additional hardwired stop circuit may be required to remove the AC line to the drive. An auxiliary braking method may be required.

Important points to remember about I/O wiring:

- Always use copper wire.
- Wire with an insulation rating of 600V or greater is recommended.
- Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).

Important: I/O terminals labeled “(–)” or “Common” are not referenced to earth ground and are designed to greatly reduce common mode interference. Grounding these terminals can cause signal noise.



ATTENTION: Configuring an analog input for 0-20mA operation and driving it from a voltage source could cause component damage. Verify proper configuration prior to applying input signals.



ATTENTION: Hazard of personal injury or equipment damage exists when using bipolar input sources. Noise and drift in sensitive input circuits can cause unpredictable changes in motor speed and direction. Use speed command parameters to help reduce input source sensitivity.

Signal and Control Wire Types

Table 1.C Recommended Signal Wire

Signal Type	Wire Type(s)	Description	Minimum Insulation Rating
Standard Analog I/O	Belden 8760/9460 (or equiv.)	0.750 mm ² (18AWG), twisted pair, 100% shield with drain ⁽¹⁾ .	300V, 75-90 degrees C (167-194 degrees F)
	Belden 8770 (or equiv.)	0.750 mm ² (18AWG), 3 cond., shielded for remote pot only.	
Encoder/ Pulse I/O	Less than or equal to 30 m (98 ft.) – Belden 9730 (or equiv.)	0.196 mm ² (24AWG), individually shielded.	
	Greater than 30 m (98 ft.) – Belden 9773 (or equiv.)	0.750 mm ² (18AWG), twisted pair, shielded.	
EMC Compliance	Refer to EMC Instructions on page 1-16 for details.		

(1) If the wires are short and contained within a cabinet which has no sensitive circuits, the use of shielded wire may not be necessary, but is always recommended.

Table 1.D Recommended Control Wire for Digital I/O

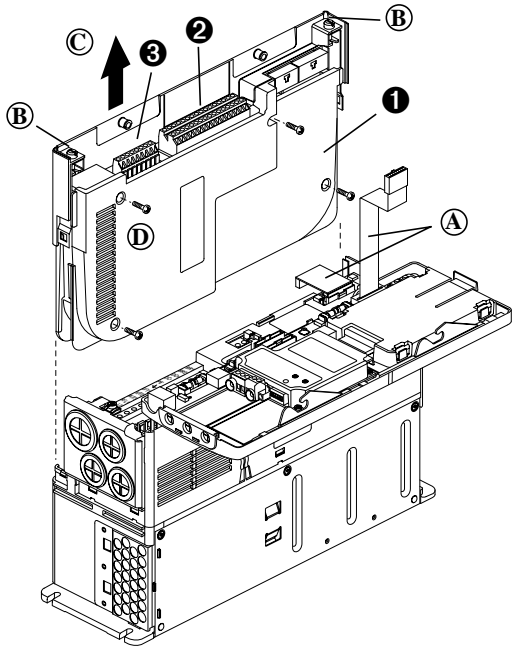
Type	Wire Type(s)	Description	Minimum Insulation Rating
Unshielded	Per US NEC or applicable national or local code	–	300V, 60 degrees C (140 degrees F)
Shielded	Multi-conductor shielded cable such as Belden 8770 (or equiv.)	0.750 mm ² (18AWG), 3 conductor, shielded.	

The I/O Cassette

Figure 1.4 shows the I/O Cassette and terminal block locations. The cassette provides a mounting point for the various PowerFlex 700 I/O options. To remove the cassette, follow the steps below. Cassette removal will be similar for all frames (0 Frame drive shown).

Step	Description
Ⓐ	Disconnect the two cable connectors shown in Figure 1.4.
Ⓑ	Loosen the two screw latches shown in Figure 1.4.
Ⓒ	Slide the cassette out.
Ⓓ	Remove screws securing cassette cover to gain access to the boards.

Figure 1.4 PowerFlex 700 Typical Cassette & I/O Terminal Blocks



Standard I/O Terminal Block

Table 1.E Standard I/O Terminal Block Specifications

No.	Name	Description	Wire Size Range ⁽¹⁾		Torque	
			Maximum	Minimum	Maximum	Recommended
Ⓐ	I/O Cassette	Removable I/O Cassette				
Ⓑ	Standard I/O Terminal Block	Signal & control connections	2.1 mm ² (14 AWG)	0.30 mm ² (22 AWG)	1.36 N-m (12 lb.-in.)	1.36 N-m (12 lb.-in.)
Ⓒ	Encoder Terminal Block (if supplied)	Encoder power & signal connections	0.75 mm ² (18 AWG)	0.196 mm ² (24 AWG)	1.36 N-m (12 lb.-in.)	1.36 N-m (12 lb.-in.)

⁽¹⁾ Maximum/minimum that the terminal block will accept - these are not recommendations.

Figure 1.5 Standard I/O Terminal Designations

No.	Signal	Factory Default	Description	Related Param.	
1	Anlg Volts In 1 (-)	(2)	Isolated ⁽³⁾ , bipolar, differential, $\pm 10V$, 11 bit & sign, 100k ohm input impedance.	320 - 329	
2	Anlg Volts In 1 (+)				
3	Anlg Volts In 2 (-)	(2)	Isolated ⁽⁴⁾ , bipolar, differential, $\pm 10V$, 11 bit & sign, 100k ohm input impedance.		
4	Anlg Volts In 2 (+)				
5	Pot Common	-	For (+) and (-) 10V pot references.		
6	Anlg Volts Out 1 (-)	(2)	Bipolar, differential, $\pm 10V$, 11 bit & sign, 2k ohm minimum load.	338 - 346	
7	Anlg Volts Out 1 (+)				
8	Anlg Current Out 1 (-)	(2)	4-20mA, 11 bit & sign, 400 ohm maximum load.		
9	Anlg Current Out 1 (+)				
10	Reserved for Future Use				
11	Digital Out 1 - N.C. ⁽¹⁾	Fault	Resistive Load Rating: 2A at 250V AC/30V DC Min. Load: 10mA Inductive Load Rating: 2A at 250V AC/30V DC Min. Load: 10mA	380 - 387	
12	Digital Out 1 Common				
13	Digital Out 1 - N.O. ⁽¹⁾	NOT Fault			
14	Digital Out 2 - N.C. ⁽¹⁾	Alarm			
15	Digital Out 2 Common				
16	Digital Out 2 - N.O. ⁽¹⁾	NOT Alarm			
17	Anlg Current In 1 (-)	(2)	Isolated ⁽³⁾ , 4-20mA, 11 bit & sign, 124 ohm input impedance.	320 - 329	
18	Anlg Current In 1 (+)				
19	Anlg Current In 2 (-)	(2)	Isolated ⁽⁴⁾ , 4-20mA, 11 bit & sign, 124 ohm input impedance.		
20	Anlg Current In 2 (+)				
21	-10V Pot Reference	-	2k ohm minimum, 15mA maximum load.		
22	+10V Pot Reference	-			
23	Reserved for Future Use				
24	+24VDC	-	Drive supplied power for logic inputs. 150mA maximum Load. ⁽⁵⁾		
25	Digital In Common	-			
26	24V Common	-	Drive supplied power for logic inputs. 150mA maximum Load. ⁽⁵⁾		
27	Digital In 1	Stop - CF	115V AC, 50/60 Hz Opto isolated (250V) Low State: less than 30V AC High State: greater than 100V AC 24V AC/DC, 50/60 Hz Opto isolated (250V) Low State: less than 5V AC High State: greater than 20V AC	361 - 366	
28	Digital In 2	Start			
29	Digital In 3	Jog			
30	Digital In 4	Speed Sel 1			
31	Digital In 5	Speed Sel 2			
32	Digital In 6	Speed Sel 3			

(1) Contacts shown in unpowered state. Relays change state when drive power is applied.

(2) These inputs/outputs are dependant on a number of parameters. See "Related Parameters."

(3) Differential Isolation - External source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.

(4) Differential Isolation - External source must be less than 10V with respect to PE.

(5) Not present on 115V versions.

I/O Wiring Examples

Input/Output	Connection Example ⁽³⁾		
Potentiometer⁽¹⁾ 10k Ohm Pot. Recommended (2k Ohm Minimum) Joystick⁽¹⁾ ±10V Input - 100k ohm input impedance.	Potentiometer	Joystick	
Analog Input ±10V Input - 100k ohm input impedance. 4-20 mA Input - 100 ohm input impedance	Voltage - Bipolar ⁽¹⁾	Current - Unipolar	
Analog/Digital Output ±10V Output - Can drive a 10k ohm load (25 mA short circuit current limit).	Voltage	Current	Logic
2 Wire Control⁽²⁾ - Non-Reversing Requires 2-wire functions only (IDig- ital In1 Sel)). Using 3-wire selections will cause a type 2 alarm (page 4-8).	24VDC Internal Supply ⁽⁴⁾	24VDC External Supply	115V External Source
3 Wire Control Requires only 3-wire functions (IDigital In1 Sel)). Including 2-wire selections will cause a type 2 alarm (page 4-8).	24VDC Internal Supply ⁽⁴⁾	24VDC External Supply	115V External Source

(1) Refer to the Attention statement on [page 1-9](#) for important bipolar wiring information.

(2) **Important:** Programming inputs for 2 wire control deactivates all HIM Start buttons.

(3) Examples show hardware wiring only. Refer to [page 1-10](#) for parameters that must be adjusted.

(4) If desired, a User Supplied 24V DC power source can be used. Refer to the "External" example.

Speed Reference Control

"Auto" Sources

The drive speed command can be obtained from a number of different sources. The source is determined by drive programming and the condition of the Speed Select Digital Inputs, Auto/Manual digital inputs or reference select bits of a command word.

The default source for a command reference (all speed select inputs open or not programmed) is the selection programmed in [Speed Ref A Sel]. If any of the speed select inputs are closed, the drive will use other parameters as the speed command source.

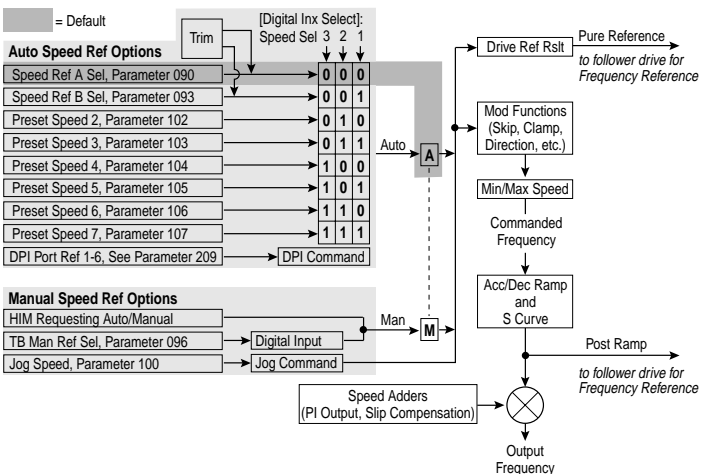
"Manual" Sources

The manual source for speed command to the drive is either the HIM requesting manual control (see [ALT Functions on page B-2](#)) or the control terminal block (analog input) if a digital input is programmed to "Auto/Manual"

Changing Reference Sources

The selection of the active Speed Reference can be made through digital inputs, DPI command, jog button or Auto/Manual HIM operation.

Figure 1.6 Speed Reference Selection Chart⁽¹⁾



⁽¹⁾ To access Preset Speed 1, set [Speed Ref A Sel] or [Speed Ref B Sel] to "Preset Speed 1".

Auto/Manual Examples

PLC = Auto, HIM = Manual

A process is run by a PLC when in Auto mode and requires manual control from the HIM during set-up. The Auto speed reference is issued by the PLC through a communications module installed in the drive. Since the internal communications is designated as Port 5, [Speed Ref A Sel] is set to “DPI Port 5” with the drive running from the Auto source.

Attain Manual Control

- Press ALT then Auto/Man on the HIM.
When the HIM attains manual control, the drive speed command comes from the HIM speed control keys or analog potentiometer.

Release to Auto Control

- Press ALT then Auto/Man on the HIM again.
When the HIM releases manual control, the drive speed command returns to the PLC.

PLC = Auto, Terminal Block = Manual

A process is run by a PLC when in Auto mode and requires manual control from an analog potentiometer wired to the drive terminal block. The auto speed reference is issued by the PLC through a communications module installed in the drive. Since the internal communications is designated as Port 5, [Speed Ref A Sel] is set to “DPI Port 5” with the drive running from the Auto source. Since the Manual speed reference is issued by an analog input (“Analog In 1 or 2”), [TB Man Ref Sel] is set to the same input. To switch between Auto and Manual, [Digital In4 Sel] is set to “Auto/ Manual”.

Attain Manual Control

- Close the digital input.
With the input closed, the speed command comes from the pot.

Release to Auto Control

- Open the digital input.
With the input open, the speed command returns to the PLC.

Auto/Manual Notes

1. Manual control is exclusive. If a HIM or Terminal Block takes manual control, no other device can take manual control until the controlling device releases manual control.
2. If a HIM has manual control and power is removed from the drive, the drive will return to Auto mode when power is reapplied.

Disconnecting MOVs and Common Mode Capacitors

PowerFlex 700 drives contain protective MOVs and common mode capacitors that are referenced to ground. To guard against drive damage, these devices should be disconnected if the drive is installed on an ungrounded distribution system where the line-to-ground voltages on any phase could exceed 125% of the nominal line-to-line voltage. To disconnect these devices, remove the jumper(s) listed in [Table 1.F](#). Jumpers can be removed by carefully pulling the jumper straight out. See the *PowerFlex Reference Manual* for more information on ungrounded system installation.

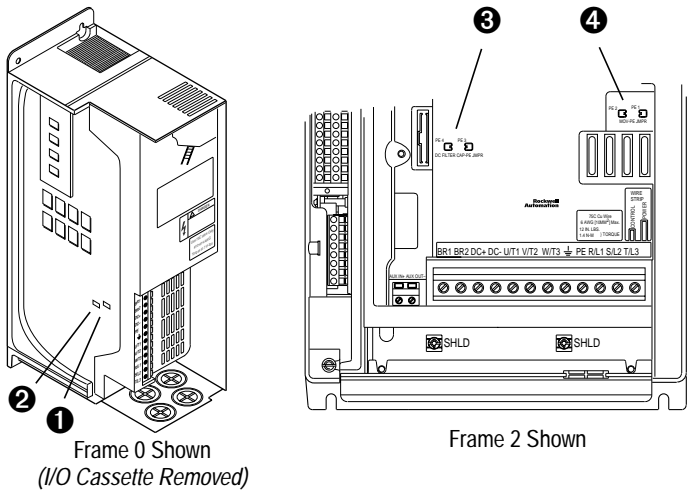


ATTENTION: To avoid an electric shock hazard, verify that the voltage on the bus capacitors has discharged before removing/installing jumpers. Measure the DC bus voltage at the +DC & –DC terminals of the Power Terminal Block. The voltage must be zero.

Table 1.F Jumper Removal

Frames	Jumper	Component	Jumper Location	No.
0, 1	PEA	Common Mode Capacitors	Remove the I/O Cassette as described on page 1-10 . Jumpers are located on the drive Power Board (see Figure 1.7).	①
	PEB	MOV's		②
2, 3	PEA	Common Mode Capacitors	Jumpers are located above the Power Terminal Block (see Figure 1.7).	③
	PEB	MOV's		④

Figure 1.7 Typical Jumper Locations



EMC Instructions

CE Conformity

Conformity with the Low Voltage (LV) Directive and Electromagnetic Compatibility (EMC) Directive has been demonstrated using harmonized European Norm (EN) standards published in the Official Journal of the European Communities. PowerFlex Drives comply with the EN standards listed below when installed according to the User Manual.

CE Declarations of Conformity are available online at:

<http://www.ab.com/certification/ce/docs>.

Low Voltage Directive (73/23/EEC)

- EN50178 Electronic equipment for use in power installations.
- EN60204-1 Safety of machinery – Electrical equipment of machines.

EMC Directive (89/336/EEC)

- EN61800-3 Adjustable speed electrical power drive systems Part 3: EMC product standard including specific test methods.

General Notes

- If the adhesive label is removed from the top of the drive, the drive must be installed in an enclosure with side openings less than 12.5 mm (0.5 in.) and top openings less than 1.0 mm (0.04 in.) to maintain compliance with the LV Directive.
- The motor cable should be kept as short as possible in order to avoid electromagnetic emission as well as capacitive currents.
- Use of line filters in ungrounded systems is not recommended.
- PowerFlex drives may cause radio frequency interference if used in a residential or domestic environment. The user is required to take measures to prevent interference, in addition to the essential requirements for CE compliance listed below, if necessary.
- Conformity of the drive with CE EMC requirements does not guarantee an entire machine or installation complies with CE EMC requirements. Many factors can influence total machine/installation compliance.

Essential Requirements for CE Compliance

Conditions 1-4 listed below **must be** satisfied for PowerFlex 700 series drives to meet the requirements of **EN61800-3**.

1. Standard PowerFlex 700 CE compatible Drive.
2. Grounding as described on [page 1-4](#).
3. Output power, control (I/O) and signal wiring must be braided, shielded cable with a coverage of 75% or better, metal conduit or equivalent attenuation.
4. Conditions in [Table 1.G](#).

Table 1.G PowerFlex 700 EN61800-3 EMC Compatibility

Frame	Drive Description	Second Environment	First Environment
		<i>Restrict Motor Cable to 30 m (98 ft.)</i>	Restricted Distribution
0	Drive with any Option(s)	✓	Not available at time of publication
1	Drive with any Option(s)	✓	
2	Drive with any Option(s)	✓	
3	Drive with any Option(s)	✓	

Start Up

This chapter describes how you start up the PowerFlex 700 Drive. Refer to [Appendix B](#) for a brief description of the LCD HIM (Human Interface Module).

For information on . . .	See page . . .
Prepare For Drive Start-Up	2-1
Status Indicators	2-2
Start-Up Routines	2-3
Running S.M.A.R.T. Start	2-4
Running an Assisted Start Up	2-4



ATTENTION: Power must be applied to the drive to perform the following start-up procedure. Some of the voltages present are at incoming line potential. To avoid electric shock hazard or damage to equipment, only qualified service personnel should perform the following procedure. Thoroughly read and understand the procedure before beginning. If an event does not occur while performing this procedure, **Do Not Proceed. Remove Power** including user supplied control voltages. User supplied voltages may exist even when main AC power is not applied to then drive. Correct the malfunction before continuing.

Prepare For Drive Start-Up

Before Applying Power to the Drive

- ☐ 1. Confirm that all inputs are connected to the correct terminals and are secure.
- ☐ 2. Verify that AC line power at the disconnect device is within the rated value of the drive.
- ☐ 3. Verify that control power voltage is correct.

The remainder of this procedure requires that a HIM be installed. If an operator interface is not available, remote devices should be used to start up the drive.

Applying Power to the Drive

4. Apply AC power and control voltages to the drive.

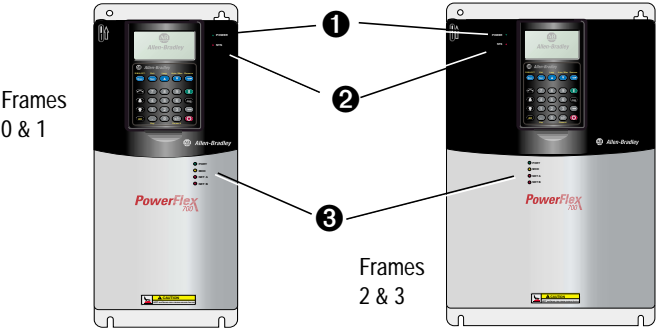
If any of the six digital inputs are configured to Stop – CF (CF = Clear Fault) or Enable, verify that signals are present or the drive will not start. Refer to [Alarm Descriptions on page 4-8](#) for a list of potential digital input conflicts.

If a fault code appears, refer to [Chapter 4](#).

If the STS LED is not flashing green at this point, refer to Status Indicators below.
5. Proceed to Start-Up Routines.

Status Indicators

Figure 2.1 Drive Status Indicators



#	Name	Color	State	Description
1	PWR (Power)	Green	Steady	Illuminates when power is applied to the drive.
2	STS (Status)	Green	Flashing	Drive ready, but not running and no faults are present.
			Steady	Drive running, no faults are present.
		Yellow See page 4-8	Flashing, Drive Stopped	A type 2 alarm condition exists, the drive cannot be started. Check parameter 212 [Drive Alarm 2].
			Flashing, Drive Running	An intermittent type 1 alarm condition is occurring. Check parameter 211 [Drive Alarm 1].
			Steady, Drive Running	A continuous type 1 alarm condition exists. Check parameter 211 [Drive Alarm 1].
		Red See page 4-4	Flashing	A fault has occurred.
			Steady	A non-resettable fault has occurred.
3	PORT	Refer to the Communication Adapter User Manual.		Status of DPI port internal communications (if present).
	MOD			Status of communications module (when installed).
	NET A			Status of network (if connected).
	NET B			Status of secondary network (if connected).

Start-Up Routines

The PowerFlex 700 is designed so that start up is simple and efficient. If you have an LCD HIM, two start-up methods are provided, allowing the user to select the desired level needed for the application.

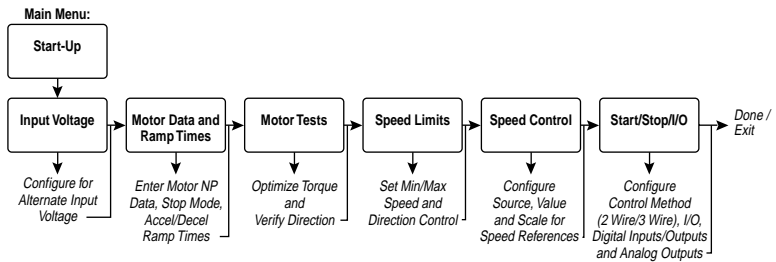
- **S.M.A.R.T. Start**

This routine allows you to quickly set up the drive by programming values for the most commonly used functions (see below).

- **Assisted Start Up**

This routine prompts you for information that is needed to start up a drive for most applications, such as line and motor data, commonly adjusted parameters and I/O.

Figure 2.2 Start Up Menu





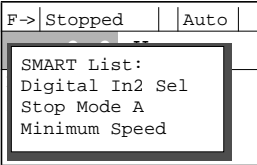

Important: Power must be applied to the drive when viewing or changing parameters. Previous programming may affect the drive status when power is applied.

Running S.M.A.R.T. Start

During a Start Up, the majority of applications require changes to only a few parameters. The LCD HIM on a PowerFlex 700 drive offers S.M.A.R.T. start, which displays the most commonly changed parameters. With these parameters, you can set the following functions:

- S - Start Mode and Stop Mode
- M - Minimum and Maximum Speed
- A - Accel Time 1 and Decel Time 1
- R - Reference Source
- T - Thermal Motor Overload

To run a S.M.A.R.T. start routine:



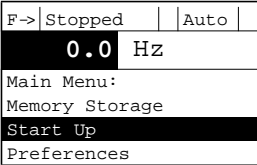

Step	Key(s)	Example LCD Displays
1. Press ALT and then Esc (S.M.A.R.T.). The S.M.A.R.T. start screen appears.	 	
2. View and change parameter values as desired. For HIM information, see Appendix B.		
3. Press Esc to exit the S.M.A.R.T. start.		

Running an Assisted Start Up

Important: This start-up routine requires an LCD HIM.

The Assisted start-up routine asks simple yes or no questions and prompts you to input required information. Access Assisted Start Up by selecting “Start Up” from the Main Menu.

To perform an Assisted Start-Up

Step	Key(s)	Example LCD Displays
1. In the Main Menu, press the Up Arrow or Down Arrow to scroll to “Start Up”.	 	
2. Press Enter.		

Programming and Parameters

Chapter 3 provides a complete listing and description of the PowerFlex 700 parameters. The parameters can be programmed (viewed/edited) using an LCD HIM (Human Interface Module). As an alternative, programming can also be performed using DriveExplorer™ or DriveTools32™ software and a personal computer. Refer to [Appendix B](#) for a brief description of the LCD HIM.


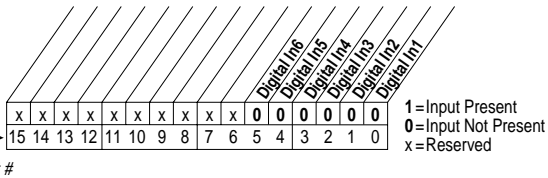
For information on . . .	See page . . .
About Parameters	3-1
How Parameters are Organized	3-3
Monitor File	3-8
Motor Control File	3-9
Speed Command File	3-12
Dynamic Control File	3-18
Utility File	3-22
Communication File	3-31
Inputs & Outputs File	3-35
Parameter Cross Reference – by Name	3-39
Parameter Cross Reference – by Number	3-41



About Parameters

To configure a drive to operate in a specific way, drive parameters may have to be set. Three types of parameters exist:

- **ENUM Parameters**
ENUM parameters allow a selection from 2 or more items. The LCD HIM will display a text message for each item.
- **Bit Parameters**
Bit parameters have individual bits associated with features or conditions. If the bit is 0, the feature is off or the condition is false. If the bit is 1, the feature is on or the condition is true.
- **Numeric Parameters**
These parameters have a single numerical value (i.e. 0.1 Volts).

The example on the following page shows how each parameter type is presented in this manual.

1	2	3	4	5	6
File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	Drive ...	202	[Voltage Class]  Resets selected parameters that change the drive rating. Voltage rating, current rating, scaling, motor data and maximum frequency will be affected by changing this parameter.	Default: Based on Drive Cat. No. Options: 2 "Low Voltage" 3 "High Voltage"	
	Diagnostics	216	[Dig In Status] Status of the digital inputs. <div style="text-align: center;">  <p>1 = Input Present 0 = Input Not Present x = Reserved</p> </div>		
		218	[Drive Temp] Present operating temperature of the drive power section.	Default: Read Only Min/Max: 0.0/100.0% Display: 0.1%	

No.	Description	
1	File – Lists the major parameter file category.	
2	Group – Lists the parameter group within a file.	
3	No. – Parameter number.  = Stop drive before changing this parameter.  = 32 bit parameter.	
4	Parameter Name & Description – Parameter name as it appears on an LCD HIM, with a brief description of the parameters function.	
5	Values – Defines the various operating characteristics of the parameter. Three types exist.	
	ENUM	Default: Lists the value assigned at the factory. "Read Only" = no default. Options: Displays the programming selections available.
	Bit	Bit: Lists the bit place holder and definition for each bit.
	Numeric	Default: Lists the value assigned at the factory. "Read Only" = no default. Min/Max: The range (lowest and highest setting) possible for the parameter. Display: Unit of measure and resolution as shown on the LCD HIM. Important: When sending values through DPI ports, simply remove the decimal point to arrive at the correct value (i.e. to send "5.00 Hz," use "500").
6	Related – Lists parameters (if any) that interact with the selected parameter.	

How Parameters are Organized

The LCD HIM displays parameters in a **File-Group-Parameter** or **Numbered List** view order. To switch display mode, access the Main Menu, press ALT, then Sel. In addition, using [\[Param Access Lvl\]](#), the user has the option to display *all* parameters or just the commonly used parameters. Refer to [Basic Parameter View on page 3-4](#) and [Advanced Parameter View on page 3-5](#).

File-Group-Parameter Order

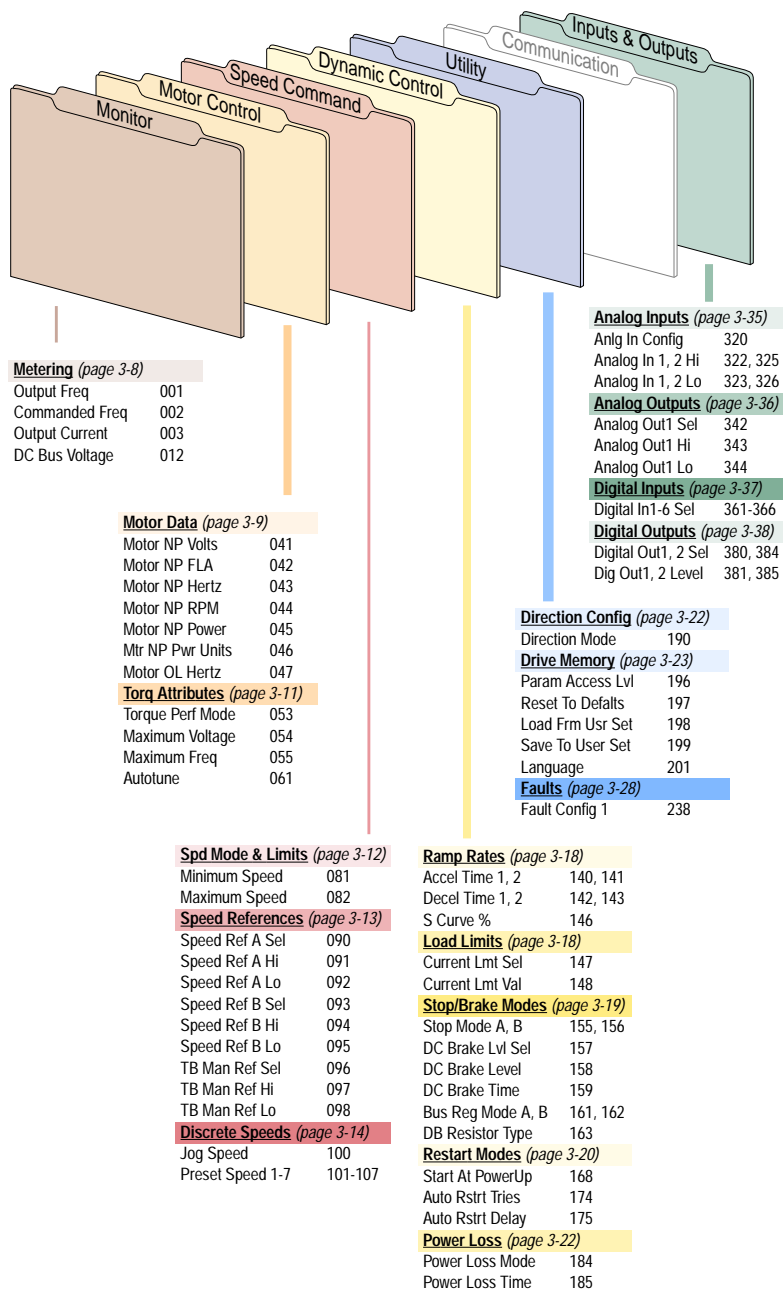
This simplifies programming by grouping parameters that are used for similar functions. The parameters are organized into 6 files in Basic Parameter view or 7 files in Advanced Parameter view. Each file is divided into groups, and each parameter is an element in a group. By default, the LCD HIM displays parameters by File-Group-Parameter view.

Numbered List View

All parameters are in numerical order.

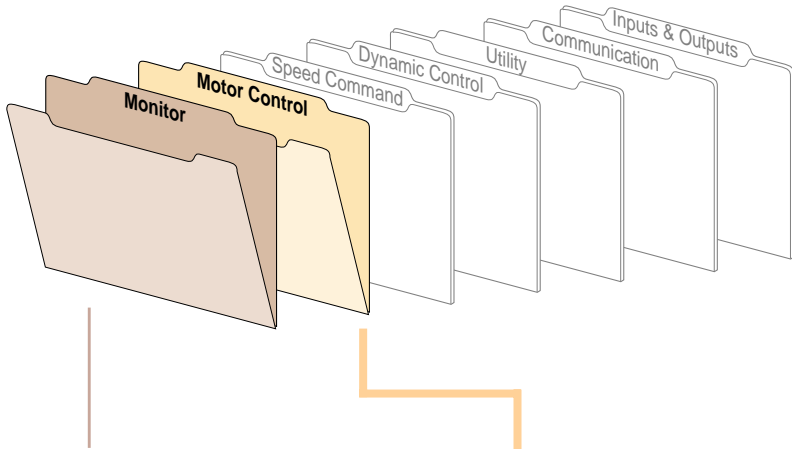
Basic Parameter View

(Parameter 196 [Param Access Lvl] set to option 0 “Basic.”)



Advanced Parameter View

(Parameter 196 [Param Access Lvl] set to option 1 “Advanced.”)



Metering (page 3-8)

Output Freq	001
Commanded Freq	002
Output Current	003
Torque Current	004
Flux Current	005
Output Voltage	006
Output Power	007
Output Powr Fctr	008
Elapsed MWh	009
Elapsed Run Time	010
MOP Frequency	011
DC Bus Voltage	012
DC Bus Memory	013
Analog In1, 2 Value	016, 017

Drive Data (page 3-9)

Rated kW	026
Rated Volts	027
Rated Amps	028
Control SW Ver	029

Motor Data (page 3-9)

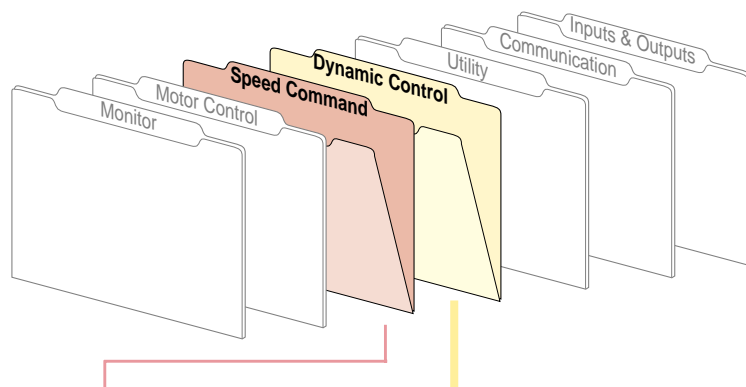
Motor Type	040
Motor NP Volts	041
Motor NP FLA	042
Motor NP Hertz	043
Motor NP RPM	044
Motor NP Power	045
Mtr NP Pwr Units	046
Motor OL Hertz	047
Motor OL Factor	048

Torque Attributes (page 3-11)

Torque Perf Mode	053
Maximum Voltage	054
Maximum Freq	055
Compensation	056
Flux Up Mode	057
Flux Up Time	058
SV Boost Filter	059
Autotune	061
IR Voltage Drop	062
Flux Current Ref	063
IXo Voltage Drop	064

Volts per Hertz (page 3-12)

Start/Acc Boost	069
Run Boost	070
Break Voltage	071
Break Frequency	072

**Spd Mode & Limits** (page 3-12)

Speed Mode	080
Minimum Speed	081
Maximum Speed	082
Overspeed Limit	083
Skip Frequency 1-3	084-086
Skip Freq Band	087

Speed References (page 3-13)

Speed Ref A Sel	090
Speed Ref A Hi	091
Speed Ref A Lo	092
Speed Ref B Sel	093
Speed Ref B Hi	094
Speed Ref B Lo	095
TB Man Ref Sel	096
TB Man Ref Hi	097
TB Man Ref Lo	098

Discrete Speeds (page 3-14)

Jog Speed	100
Preset Speed 1-7	101-107

Speed Trim (page 3-15)

Trim In Select	117
Trim Out Select	118
Trim Hi	119
Trim Lo	120

Slip Comp (page 3-15)

Slip RPM @ FLA	121
Slip Comp Gain	122
Slip RPM Meter	123

Process PI (page 3-16)

PI Configuration	124
PI Control	125
PI Reference Sel	126
PI Setpoint	127
PI Feedback Sel	128
PI Integral Time	129
PI Prop Gain	130
PI Lower Limit	131
PI Upper Limit	132
PI Preload	133
PI Status	134
PI Ref Meter	135
PI Fdbck Meter	136
PI Error Meter	137
PI Output Meter	138

Ramp Rates (page 3-18)

Accel Time 1, 2	140, 141
Decel Time 1, 2	142, 143
S Curve %	146

Load Limits (page 3-18)

Current Lmt Sel	147
Current Lmt Val	148
Current Lmt Gain	149
Drive OL Mode	150
PWM Frequency	151

Stop/Brake Modes (page 3-19)

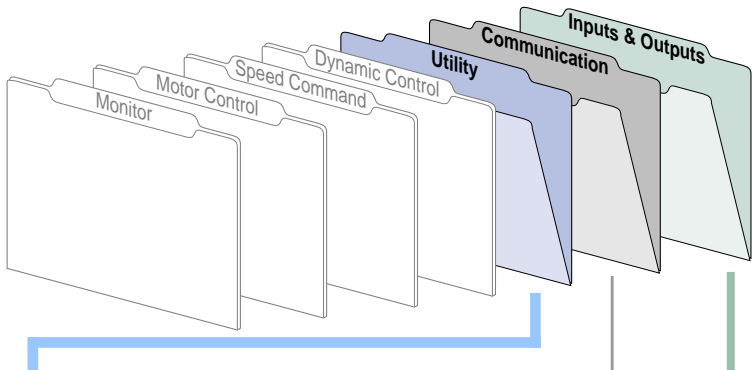
Stop Mode A, B	155, 156
DC Brake Lvl Sel	157
DC Brake Level	158
DC Brake Time	159
Bus Reg Ki	160
Bus Reg Mode A, B	161, 162
DB Resistor Type	163
Bus Reg Kp	164
Bus Reg Kd	165

Restart Modes (page 3-20)

Start At PowerUp	168
Flying Start En	169
Flying StartGain	170
Auto Rstrt Tries	174
Auto Rstrt Delay	175
Sleep Wake-Mode	178
Sleep-Wake Ref	179
Wake Level	180
Wake Time	181
Sleep Level	182
Sleep Time	183

Power Loss (page 3-22)

Power Loss Mode	184
Power Loss Time	185
Power Loss Level	186

**Direction Config (page 3-22)**

Direction Mode 190

HIM Ref Config (page 3-22)

Save HIM Ref 192

Man Ref Preload 193

MOP Config (page 3-23)

Save MOP Ref 194

MOP Rate 195

Drive Memory (page 3-23)

Param Access Lvl 196

Reset To Defaults 197

Load Frm Usr Set 198

Save To User Set 199

Reset Meters 200

Language 201

Voltage Class 202

Drive Checksum 203

Diagnostics (page 3-24)

Drive Status 1, 2 209, 210

Drive Alarm 1, 2 211, 212

Speed Ref Source 213

Start Inhibits 214

Last Stop Source 215

Dig In Status 216

Dig Out Status 217

Drive Temp 218

Drive OL Count 219

Motor OL Count 220

Fault Frequency 224

Fault Amps 225

Fault Bus Volts 226

Status 1, 2 @ Fault 227, 228

Alarm 1, 2 @ Fault 229, 230

Testpoint 1, 2 Sel 234, 236

Testpoint 1, 2 Data 235, 237

Faults (page 3-28)

Fault Config 1 238

Fault Clear 240

Fault Clear Mode 241

Power Up Marker 242

Fault 1-8 Code 243-257

Fault 1-8 Time 244-258

Alarms (page 3-30)

Alarm Config 1 259

Alarm Clear 261

Alarm 1-8 Code 262-269

Comm Control (page 3-31)

DPI Data Rate 270

Drive Logic Rslt 271

Drive Ref Rslt 272

Drive Ramp Rslt 273

Masks & Owners (page 3-32)

Logic Mask 276

Start Mask 277

Jog Mask 278

Direction Mask 279

Reference Mask 280

Accel Mask 281

Decel Mask 282

Fault Clr Mask 283

MOP Mask 284

Local Mask 285

Stop Owner 288

Start Owner 289

Jog Owner 290

Direction Owner 291

Reference Owner 292

Accel Owner 293

Decel Owner 294

Fault Clr Owner 295

MOP Owner 296

Local Owner 297

Datalinks (page 3-34)

Data In A1 300

Data In A2 301

Data In B1 302

Data In B2 303

Data In C1 304

Data In C2 305

Data In D1 306

Data In D2 307

Data Out A1 310

Data Out A2 311

Data Out B1 312

Data Out B2 313

Data Out C1 314

Data Out C2 315

Data Out D1 316

Data Out D2 317

Analog Inputs (page 3-35)

Anlg In Config 320

Anlg In Sqr Root 321

Analog In 1, 2 Hi 322, 325

Analog In 1, 2 Lo 323, 326

Anlg In 1, 2 Loss 324, 327

Analog Outputs (page 3-36)

Anlg Out Config 340

Anlg Out Absolut 341

Analog Out1 Sel 342

Analog Out1 Hi 343

Analog Out1 Lo 344

Digital Inputs (page 3-37)

Digital In1-6 Sel 361-366

Digital Outputs (page 3-38)

Digital Out1, 2 Sel 380, 384


Dig Out1, 2 Level 381, 385

Dig Out1, 2 OnTime 382, 386








Dig Out1, 2 OffTime 383, 387

Monitor File




File	Group	No.	Parameter Name & Description	Values		Related
MONITOR	Metering	001	[Output Freq] Output frequency present at T1, T2 & T3 (U, V & W)	Default: Min/Max: Display:	Read Only -/+ [Maximum Freq] 0.1 Hz	
		002	[Commanded Freq] Value of the active frequency command.	Default: Min/Max: Display:	Read Only -/+ [Maximum Speed] 0.1 Hz	
		003	[Output Current] The total output current present at T1, T2 & T3 (U, V & W).	Default: Min/Max: Display:	Read Only 0.0/Drive Rated Amps × 2 0.1 Amps	
		004	[Torque Current] The amount of current that is in phase with the fundamental voltage component.	Default: Min/Max: Display:	Read Only Drive Rating × -2/+2 0.1 Amps	
		005	[Flux Current] The amount of current that is out of phase with the fundamental voltage component.	Default: Min/Max: Display:	Read Only Drive Rating × -2/+2 0.1 Amps	
		006	[Output Voltage] Output voltage present at terminals T1, T2 & T3 (U, V & W).	Default: Min/Max: Display:	Read Only 0.0/Drive Rated Volts 0.1 VAC	
		007	[Output Power] Output power present at T1, T2 & T3 (U, V & W).	Default: Min/Max: Display:	Read Only 0.0/Drive Rated kW × 2 0.1 kW	
		008	[Output Powr Fctr] Output power factor.	Default: Min/Max: Display:	Read Only 0.0/1.0 0.1	
		009	[Elapsed MWh] 32 Accumulated output energy of the drive.	Default: Min/Max: Display:	Read Only 0.0/429,496,729.5 MWh 0.1 MWh	
		010	[Elapsed Run Time] 32 Accumulated time drive is outputting power.	Default: Min/Max: Display:	Read Only 0.0/429,496,729.5 Hrs 0.1 Hrs	
		011	[MOP Frequency] Value of the signal at MOP (Motor Operated Potentiometer).	Default: Min/Max: Display:	Read Only -/+ [Maximum Frequency] 0.1 Hz	
		012	[DC Bus Voltage] Present DC bus voltage level.	Default: Min/Max: Display:	Read Only Based on Drive Rating 0.1 VDC	
		013	[DC Bus Memory] 6 minute average of DC bus voltage level.	Default: Min/Max: Display:	Read Only Based on Drive Rating 0.1 VDC	


File	Group	No.	Parameter Name & Description	Values		Related
MONITOR	Metering	016	[Analog In1 Value]	Default:	Read Only	
		017	[Analog In2 Value] Value of the signal at the analog inputs.	Min/Max: Display:	0.000/20.000 mA -/+10.000V 0.001 mA or 0.001 Volt	
	Drive Data	026	[Rated kW]  Drive power rating.	Default: Min/Max: Display:	Read Only 0.37/15.0 kW 0.1 kW	
		027	[Rated Volts] The drive input voltage class (208, 240, 400 etc.).	Default: Min/Max: Display:	Read Only 208/480 Volt 0.1 VAC	
		028	[Rated Amps] The drive rated output current.	Default: Min/Max: Display:	Read Only 1.1/32.2 Amps 0.1 Amps	
		029	[Control SW Ver] Main Control Board software version.	Default: Min/Max: Display:	Read Only 0.000/65.256 0.001	196

Motor Control File




File	Group	No.	Parameter Name & Description	Values		Related
MOTOR CONTROL	Motor Data	040	[Motor Type]  Set to match the type of motor connected.	Default: Options:	0 "Induction" 0 "Induction" 1 "Synchr Reluc" 2 "Synchr PM"	
		041	[Motor NP Volts]  Set to the motor nameplate rated volts.	Default: Min/Max: Display:	Based on Drive Rating 0.0/[Rated Volts] 0.1 VAC	
		042	[Motor NP FLA]  Set to the motor nameplate rated full load amps.	Default: Min/Max: Display:	Based on Drive Rating 0.0/[Rated Amps] × 2 0.1 Amps	
		043	[Motor NP Hertz]  Set to the motor nameplate rated frequency.	Default: Min/Max: Display:	Based on Drive Cat. No. 5.0/400.0 Hz 0.1 Hz	
		044	[Motor NP RPM]  Set to the motor nameplate rated RPM.	Default: Min/Max: Display:	1750 RPM 60/24000 RPM 1 RPM	
		045	[Motor NP Power]  Set to the motor nameplate rated power.	Default: Min/Max: Display:	Based on Drive Rating 0.0/100.0 See [Mtr NP Pwr Units]	
						


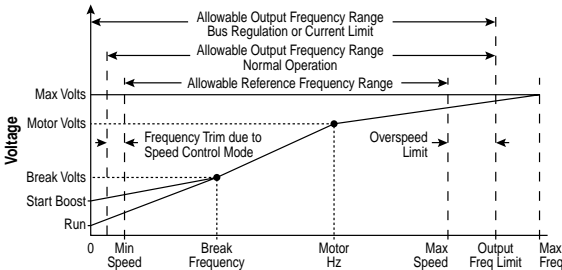

File	Group	No.	Parameter Name & Description	Values	Related
MOTOR CONTROL	Motor Data	046	[Mtr NP Pwr Units] The power units shown on the motor nameplate.	Default: Based on Drive Rating Options: 0 "Horsepower" 1 "kiloWatts"	
		047	[Motor OL Hertz] Selects the output frequency below which the motor operating current is derated. The motor thermal overload will generate a fault at lower levels of current.	Default: Motor NP Hz/3 Min/Max: 0.0/Motor NP Hz Display: 0.1 Hz	042 220
		048	[Motor OL Factor] Sets the operating level for the motor overload. $\text{Motor FLA} \times \text{OL Factor} = \text{Operating Level}$	Default: 1.0 Min/Max: 0.20/2.0 Display: 0.01	042 220
	Torq Attributes	053	[Torque Perf Mode] Sets the method of motor torque production.	Default: 0 "Sensrls Vect" Options: 0 "Sensrls Vect" 1 "SV Economize" 2 "Custom V/Hz" 3 "Fan/Pmp V/Hz"	062 063 069 070
		054	[Maximum Voltage] Sets the highest voltage the drive will output.	Default: Drive Rated Volts Min/Max: Rated Volts \times 0.25/1.0 Display: 0.1 VAC	
		055	[Maximum Freq] Sets the highest frequency the drive will output. Refer to parameter 083 [Overspeed Limit].	Default: 110.0 or 130.0 Hz Min/Max: 5.0/400.0 Hz Display: 0.1 Hz	083
		056	[Compensation] Enables/disables correction options. Bit # Factory Default Bit Values		
		057	[Flux Up Mode] Auto = Flux is established for a calculated time period based on motor nameplate data. [Flux Up Time] is not used. Manual = Flux is established for [Flux Up Time] before acceleration.	Default: 0 "Manual" Options: 0 "Manual" 1 "Automatic"	053 058



File	Group	No.	Parameter Name & Description	Values	Related
MOTOR CONTROL	Torq Attributes	058	[Flux Up Time] Sets the amount of time the drive will use to try and achieve full motor stator flux. When a Start command is issued, DC current at current limit level is used to build stator flux before accelerating.	Default: 0.0 Secs Min/Max: 0.0/5.0 Secs Display: 0.1 Secs	053 058
		059	[SV Boost Filter] Sets the amount of filtering used to boost voltage during Sensorless Vector operation.	Default: 16000 Min/Max: 0/32767 Display: 1	
		061	[Autotune]  Provides a manual or automatic method for setting [IR Voltage Drop] and [Flux Current Ref], which affect sensorless vector performance. Valid only when [Torque Perf Mode] is set to "Sensrls Vect" or "SV Economize."	Default: 3 "Calculate" Options: 0 "Ready" 1 "Static Tune" 2 "Rotate Tune" 3 "Calculate"	053 062
		<p>"Ready" (0) = Parameter returns to this setting following a "Static Tune" or "Rotate Tune." It also permits manually setting [IR Voltage Drop] and [Flux Current Ref].</p> <p>"Static Tune" (1) = A temporary command that initiates a non-rotational motor stator resistance test for the best possible automatic setting of [IR Voltage Drop]. A start command is required following initiation of this setting. The parameter returns to "Ready" (0) following the test, at which time another start transition is required to operate the drive in normal mode. Used when motor cannot be uncoupled from the load.</p> <p>"Rotate Tune" (2) = A temporary command that initiates a "Static Tune" followed by a rotational test for the best possible automatic setting of [Flux Current Ref]. A start command is required following initiation of this setting. The parameter returns to "Ready" (0) following the test, at which time another start transition is required to operate the drive in normal mode. Important: Used when motor is uncoupled from the load. Results may not be valid if a load is coupled to the motor during this procedure.</p> <hr/> <div>  <p>ATTENTION: Rotation of the motor in an undesired direction can occur during this procedure. To guard against possible injury and/or equipment damage, it is recommended that the motor be disconnected from the load before proceeding.</p> </div> <hr/> <p>"Calculate" (3) = This setting uses motor nameplate data to automatically set [IR Voltage Drop] and [Flux Current Ref].</p>			
		062	[IR Voltage Drop] Value of volts dropped across the resistance of the motor stator. Used only when [Torque Perf Mode] is set to "Sensrls Vect" or "SV Economize."	Default: Based on Drive Rating Min/Max: 0.0/[Motor NP Volts]x0.25 Display: 0.1 VAC	053 061
		063	[Flux Current Ref]  Value of amps for full motor flux. Used only when [Torque Perf Mode] is set to "Sensrls Vect" or "SV Economize."	Default: Based on Drive Rating Min/Max: 0.00/[Motor NP FLA] Display: 0.01 Amps	053 061



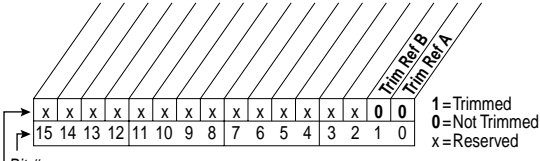
File	Group	No.	Parameter Name & Description	Values	Related
MOTOR CONTROL	Volts per Hertz	064	[Ixo Voltage Drop]  Sets the value of voltage drop due to leakage inductance of the motor. Used only when [Torque Perf Mode] is set to "Sensrls Vect" or "SV Economize."	Default: Based on Drive Rating Min/Max: 0.0/230.0 or 480.0VAC Display: 0.1 VAC	
		069	[Start/Acc Boost] Sets the voltage boost level for starting and acceleration when "Custom V/Hz" mode is selected. Refer to parameter 083 [Overspeed Limit].	Default: Based on Drive Rating Min/Max: 0.0/[Motor NP Volts] × 0.25 Display: 0.1 VAC	053 070
		070	[Run Boost] Sets the boost level for steady state or deceleration when "Fan/Pmp V/Hz" or "Custom V/Hz" modes are selected. Refer to parameter 083 [Overspeed Limit].	Default: Based on Drive Rating Min/Max: 0.0/[Motor NP Volts] × 0.25 Display: 0.1 VAC	053 069
		071	[Break Voltage] Sets the voltage the drive will output at [Break Frequency]. Refer to parameter 083 [Overspeed Limit].	Default: [Motor NP Volts] × 0.25 Min/Max: 0.0/[Motor NP Volts] Display: 0.1 VAC	053 072
		072	[Break Frequency] Sets the frequency the drive will output at [Break Voltage]. Refer to parameter 083 [Overspeed Limit].	Default: [Motor NP Freq] × 0.25 Min/Max: 0.0/[Motor NP Freq] Display: 0.1 Hz	053 071

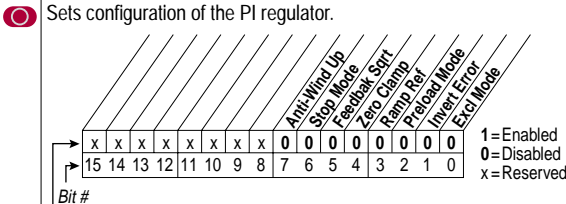
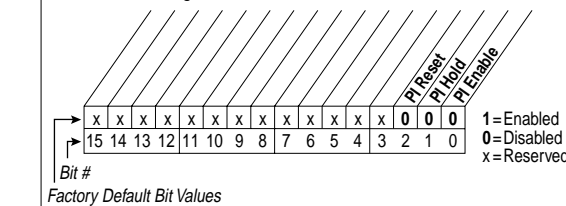
Speed Command File

File	Group	No.	Parameter Name & Description	Values	Related
SPEED COMMAND	Spd Mode & Limits	080	[Speed Mode]  Sets the method of speed regulation.	Default: 0 "Open Loop" Options: 0 "Open Loop" 1 "Slip Comp" 2 "Process PI"	121 thru 138
		081	[Minimum Speed]  Sets the low limit for speed reference after scaling is applied. Refer to parameter 083 [Overspeed Limit].	Default: 0.0 Hz Min/Max: 0.0/[Maximum Speed] Display: 0.1 Hz	092 095
		082	[Maximum Speed]  Sets the high limit for speed reference after scaling is applied. Refer to parameter 083 [Overspeed Limit].	Default: 50.0 or 60.0 Hz (Dependent on voltage class) Min/Max: 5.0/400.0 Hz Display: 0.0 Hz	055 083 091 094 202

File	Group	No.	Parameter Name & Description	Values	Related
SPEED COMMAND	Spd Mode & Limits	083	[Overspeed Limit]  Sets the incremental amount of the output frequency (above [Maximum Speed]) allowable for functions such as slip compensation. [Maximum Speed] + [Overspeed Limit] must be ≤ [Maximum Freq]	Default: 10.0 Hz Min/Max: 0.0/20.0 Hz Display: 0.1 Hz	055 082
					
		084	[Skip Frequency 1]	Default: 0.0 Hz	087
		085	[Skip Frequency 2]	Default: 0.0 Hz	
		086	[Skip Frequency 3]	Default: 0.0 Hz	
	Speed References		Sets a frequency at which the drive will not operate. [Skip Frequency 1-3] and [Skip Frequency Band] must not equal 0.	Min/Max: -/[Maximum Speed] Display: 0.1 Hz	
		087	[Skip Freq Band]	Default: 0.0 Hz Min/Max: 0.0/30.0 Hz Display: 0.1 Hz	084 085 086
		090	[Speed Ref A Sel]  Selects the source of the speed reference to the drive unless [Speed Ref B Sel] or [Preset Speed 1-7] is selected. (1) See Appendix B for DPI port locations.	Default: 2 "Analog In 2" Options: <ul style="list-style-type: none"> 1 "Analog In 1" 2 "Analog In 2" 3-8 "Reserved" 9 "MOP Level" 10 "Reserved" 11 "Preset Spd1" 12 "Preset Spd2" 13 "Preset Spd3" 14 "Preset Spd4" 15 "Preset Spd5" 16 "Preset Spd6" 17 "Preset Spd7" 18 "DPI Port 1"⁽¹⁾ 19 "DPI Port 2"⁽¹⁾ 20 "DPI Port 3"⁽¹⁾ 21 "DPI Port 4"⁽¹⁾ 22 "DPI Port 5"⁽¹⁾ 	002 091 thru 093 101 thru 107 117 thru 120 192 thru 194 213 272 273 320 361 thru 366


File	Group	No.	Parameter Name & Description	Values	Related
SPEED COMMAND	Speed References	091	[Speed Ref A Hi] Scales the upper value of the [Speed Ref A Sel] selection when the source is an analog input.	Default: [Maximum Speed] Min/Max: -/+ [Maximum Speed] Display: 0.1 Hz	082
		092	[Speed Ref A Lo] Scales the lower value of the [Speed Ref A Sel] selection when the source is an analog input.	Default: 0.0 Hz Min/Max: -/+ [Maximum Speed] Display: 0.1 Hz	081
		093	[Speed Ref B Sel]  See [Speed Ref A Sel] .	Default: 11 "Preset Spd1" Options: See [Speed Ref A Sel]	See 090
		094	[Speed Ref B Hi] Scales the upper value of the [Speed Ref B Sel] selection when the source is an analog input.	Default: [Maximum Speed] Min/Max: -/+ [Maximum Speed] Display: 0.1 Hz	093
		095	[Speed Ref B Lo] Scales the lower value of the [Speed Ref B Sel] selection when the source is an analog input.	Default: 0.0 Hz Min/Max: -/+ [Maximum Speed] Display: 0.1 Hz	090 093
		096	[TB Man Ref Sel]  Sets the manual speed reference source when a digital input is configured for "Auto/Manual." (1) "Analog In 2" is not a valid selection if it was selected for any of the following: - [Trim In Select] - [PI Feedback Sel] - [PI Reference Sel] - [Current Lmt Sel] - [Sleep-Wake Ref]	Default: 1 "Analog In 1" Options: 1 "Analog In 1" 2 "Analog In 2" ⁽¹⁾ 3-8 "Reserved" 9 "MOP Level"	097 098
		097	[TB Man Ref Hi] Scales the upper value of the [TB Man Ref Sel] selection when the source is an analog input.	Default: [Maximum Speed] Min/Max: -/+ [Maximum Speed] Display: 0.1 Hz	096
		098	[TB Man Ref Lo] Scales the lower value of the [TB Man Ref Sel] selection when the source is an analog input.	Default: 0.0 Hz Min/Max: -/+ [Maximum Speed] Display: 0.1 Hz	096
	Discrete Speeds	100	[Jog Speed] Sets the output frequency when a jog command is issued.	Default: 10.0 Hz Min/Max: -/+ [Maximum Speed] Display: 0.1 Hz	




File	Group	No.	Parameter Name & Description	Values	Related
SPEED COMMAND	Discrete Speeds	101	[Preset Speed 1]	Default: 5.0 Hz	090
		102	[Preset Speed 2]	10.0 Hz	093
		103	[Preset Speed 3]	20.0 Hz	
		104	[Preset Speed 4]	30.0 Hz	
		105	[Preset Speed 5]	40.0 Hz	
		106	[Preset Speed 6]	50.0 Hz	
		107	[Preset Speed 7]	60.0 Hz	
			Provides an internal fixed speed command value. In bipolar mode direction is commanded by the sign of the reference.	Min/Max: $-/+$ [Maximum Speed] Display: 0.1 Hz	
	Speed Trim	117	[Trim In Select]  Specifies which analog input signal is being used as a trim input.	Default: 2 "Analog In 2" Options: See [Speed Ref A Sell]	090 093
		118	[Trim Out Select]  Specifies which speed references are to be trimmed.		117 119 120
			 <p>1 = Trimmed 0 = Not Trimmed x = Reserved</p>		
			<p>Bit #</p> <p>Factory Default Bit Values</p>		
		119	[Trim Hi] Scales the upper value of the [Trim In Select] selection when the source is an analog input.	Default: 60.0 Hz Min/Max: $-/+$ [Maximum Speed] Display: 0.1 Hz	082 117
		120	[Trim Lo] Scales the lower value of the [Trim In Select] selection when the source is an analog input.	Default: 0.0 Hz Min/Max: $-/+$ [Maximum Speed] Display: 0.1 Hz	117
	Slip Comp		Important: Parameters in the Slip Comp Group are used to enable and tune the Slip Compensation Regulator. In order to allow the Slip Compensation Regulator to control drive operation, parameter 080 [Speed Mode] must be set to 1 "Slip Comp".		
		121	[Slip RPM @ FLA] Sets the amount of compensation to drive output at motor FLA. If the value of parameter 061 [Autotune] = 3 "Calculate" changes made to this parameter will not be accepted.	Default: Based on [Motor NP RPM] Min/Max: 0.0/1200.0 RPM Display: 0.1 RPM	061 080 122 123
		122	[Slip Comp Gain] Sets the response time of slip compensation.	Default: 40.0 Min/Max: 1.0/100.0 Display: 0.1	080 121 122



File	Group	No.	Parameter Name & Description	Values	Related
SPEED COMMAND	Slip Comp	123	[Slip RPM Meter] Displays the present amount of adjustment being applied as slip compensation.	Default: Read Only Min/Max: 0.0/300.0 RPM Display: 0.1 RPM	080 121 122
	Process PI	Important: Parameters in the Process PI Group are used to enable and tune the PI Loop. In order to allow the PI Loop to control drive operation, parameter 080 [Speed Mode] must be set to 2 "Process PI".			
		124	[PI Configuration]  <p>Factory Default Bit Values</p>	124 thru 138	
		125	[PI Control] Controls the PI regulator.	080	
		126	[PI Reference Sel]  <p>Factory Default Bit Values</p>	Default: 0 "PI Setpoint" Options: 0 "PI Setpoint" 1 "Analog In 1" 2 "Analog In 2" 3-8 "Reserved" 9 "MOP Level" 10 "Master Ref" 11 "Preset Spd1" 12 "Preset Spd2" 13 "Preset Spd3" 14 "Preset Spd4" 15 "Preset Spd5" 16 "Preset Spd6" 17 "Preset Spd7" 18 "DPI Port 1" 19 "DPI Port 2" 20 "DPI Port 3" 21 "DPI Port 4" 22 "DPI Port 5"	124 thru 138






File	Group	No.	Parameter Name & Description	Values	Related
SPEED COMMAND	Process PI	127	[PI Setpoint] Provides an internal fixed value for process setpoint when [PI Reference Sel] is set to "PI Setpoint."	Default: 50.0% Min/Max: $\pm 100.0\%$ of Maximum Process Value Display: 0.1%	124 thru 138
		128	[PI Feedback Sel] Selects the source of the PI feedback.	Default: 2 "Analog In 2" Options: See PI Reference Sel.	124 thru 138
		129	[PI Integral Time] Time required for the integral component to reach 100% of [PI Error Meter].	Default: 2.0 Secs Min/Max: 0.0/100.0 Secs Display: 0.01 Secs	124 thru 138
		130	[PI Prop Gain] Sets the value for the PI proportional component when the PI Hold bit of [PI Control] = "1" (enabled). PI Error x PI Prop Gain = PI Output	Default: 1.0 Min/Max: 0.0/100.0 Display: 0.01	124 thru 138
		131	[PI Lower Limit] Sets the lower limit of the PI output.	Default: $-\text{[Maximum Freq]}$ Min/Max: ± 400.0 Hz Display: 0.1 Hz	124 thru 138
		132	[PI Upper Limit] Sets the upper limit of the PI output.	Default: $+\text{[Maximum Freq]}$ Min/Max: ± 400.0 Hz Display: 0.1 Hz	124 thru 138
		133	[PI Preload] Sets the value used to preload the integral component on start or enable.	Default: 0.0 Hz Min/Max: ± 400.0 Hz Display: 0.1 Hz	124 thru 138
		134	[PI Status] Status of the Process PI regulator.	Read Only	124 thru 138
			<p>Bit #</p> <p>15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0</p> <p>PI In Limit PI Reset PI Hold PI Enabled</p> <p>1 = Condition True 0 = Condition False x = Reserved</p>		
		135	[PI Ref Meter] Present value of the PI reference signal.	Default: Read Only Min/Max: $\pm 100.0\%$ Display: 0.1%	124 thru 138
		136	[PI Fdbck Meter] Present value of the PI feedback signal.	Default: Read Only Min/Max: $\pm 100.0\%$ Display: 0.1%	124 thru 138
		137	[PI Error Meter] Present value of the PI error.	Default: Read Only Min/Max: $\pm 100.0\%$ Display: 0.1%	124 thru 138
		138	[PI Output Meter] Present value of the PI output.	Default: Read Only Min/Max: $\pm \text{[Maximum Freq]}$ Display: 0.1 Hz	124 thru 138

Dynamic Control File

File	Group	No.	Parameter Name & Description	Values	Related
DYNAMIC CONTROL	Ramp Rates	140	[Accel Time 1]	Default: 10.0 Secs	142
		141	[Accel Time 2]	10.0 Secs	143
			Sets the rate of accel for all speed increases.	Min/Max: 0.1/3600.0 Secs	146
			$\frac{\text{Max Speed}}{\text{Accel Time}} = \text{Accel Rate}$	Display: 0.1 Secs	361 thru 366
		142	[Decel Time 1]	Default: 10.0 Secs	140
		143	[Decel Time 2]	10.0 Secs	141
	Load Limits		Sets the rate of decel for all speed decreases.	Min/Max: 0.1/3600.0 Secs	146
			$\frac{\text{Max Speed}}{\text{Decel Time}} = \text{Decel Rate}$	Display: 0.1 Secs	361 thru 366
		146	[S Curve %]	Default: 0%	140
			Sets the percentage of accel or decel time that is applied to the ramp as S Curve. Time is added, 1/2 at the beginning and 1/2 at the end of the ramp.	Min/Max: 0/100%	thru 143
				Display: 1%	
		147	[Current Lmt Sel]	Default: 0 "Cur Lim Val"	146
			Selects the source for the adjustment of current limit (i.e. parameter, analog input, etc.).	Options: 0 "Cur Lim Val" 1 "Analog In 1" 2 "Analog In 2"	149
		148	[Current Lmt Val]	Default: [Rated Amps] × 1.5 (Equation yields approximate default value.)	147
			Defines the current limit value when [Current Lmt Sel] = "Cur Lim Val."	Min/Max: Based on Drive Rating	149
				Display: 0.1 Amps	
		149	[Current Lmt Gain]	Default: 250	147
			Sets the responsiveness of the current limit.	Min/Max: 0/5000	148
				Display: 1	
		150	[Drive OL Mode]	Default: 3 "Both-PWM 1st"	219
			Selects the drive's response to increasing drive temperature.	Options: 0 "Disabled" 1 "Reduce CLim" 2 "Reduce PWM" 3 "Both-PWM 1st"	
		151	[PWM Frequency]	Default: 4 kHz	
			Sets the carrier frequency for the PWM output. Drive derating may occur at higher carrier frequencies. For derating information, refer to the <i>PowerFlex Reference Manual</i> .	Min/Max: 2/10 kHz	
				Display: 1 kHz	


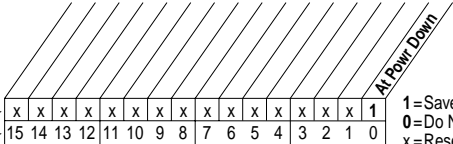
File	Group	No.	Parameter Name & Description	Values	Related
DYNAMIC CONTROL	Stop/Brake Modes	155	[Stop Mode A]	Default: 1 "Ramp"	157
		156	[Stop Mode B] Active stop mode. [Stop Mode A] is active unless [Stop Mode B] is selected by inputs. (1) When using options 1 or 2, refer to the Attention statements at [DC Brake Level].	Default: 0 "Coast" Options: 0 "Coast" 1 "Ramp" ⁽¹⁾ 2 "Ramp to Hold" ⁽¹⁾ 3 "DC Brake"	158 159
		157	[DC Brake Lvl Sel] Selects the source for [DC Brake Level].	Default: 0 "DC Brake Lvl" Options: 0 "DC Brake Lvl" 1 "Analog In 1" 2 "Analog In 2"	155 156 158 159
		158	[DC Brake Level] Defines the maximum DC brake current in percentage of drive rated current. The DC braking voltage used in this function is created by a PWM algorithm and may not generate the smooth holding force needed for some applications. Refer to the <i>PowerFlex Reference Manual</i> .	Default: [Rated Amps] Min/Max: 0/[Rated Amps] × 1.5 (Equation yields approximate maximum value.) Display: 0.1 Amps	
			 ATTENTION: If a hazard of injury due to movement of equipment or material exists, an auxiliary mechanical braking device must be used.  ATTENTION: This feature should not be used with synchronous or permanent magnet motors. Motors may be demagnetized during braking.		
		159	[DC Brake Time] Sets the amount of time DC brake current is "injected" into the motor.	Default: 0.0 Secs Min/Max: 0.0/90.0 Secs Display: 0.1 Secs	155 thru 158
		160	[Bus Reg Ki] Sets the responsiveness of the bus regulator.	Default: 450 Min/Max: 0/5000 Display: 1	161 162
		161 162	[Bus Reg Mode A] [Bus Reg Mode B]  Sets the method and sequence of the DC bus regulator voltage. Choices are dynamic brake, frequency adjust or both. Sequence is determined by programming or digital input to the terminal block. If a dynamic brake resistor is connected to the drive, both of these parameters must be set to either option 2, 3 or 4. Refer to the Attention statement on page P-4 for important information on bus regulation.	Default: 1 "Adjust Freq" 4 "Both-Frq 1st" Options: 0 "Disabled" 1 "Adjust Freq" 2 "Dynamic Brak" 3 "Both-DB 1st" 4 "Both-Frq 1st"	160 163

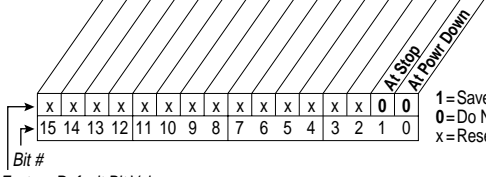


File	Group	No.	Parameter Name & Description	Values	Related
DYNAMIC CONTROL	Stop/Brake Modes	163	[DB Resistor Type] Selects whether the internal or an external DB resistor will be used.	Default: 0 "Internal Res" Options: 0 "Internal Res" 1 "External Res" 2 "None"	161 162
		164	[Bus Reg Kp] Proportional gain for the bus regulator. Used to adjust regulator response.	Default: 500 Min/Max: 0/1000 Display: 1	
		165	[Bus Reg Kd] Derivative gain for the bus regulator. Used to control regulator overshoot.	Default: 1000 Min/Max: 0/10000 Display: 1	
	Restart Modes	168	[Start At PowerUp] Enables/disables a feature to issue a Start or Run command and automatically resume running at commanded speed after drive input power is restored. Requires a digital input configured for Run or Start and a valid start contact.  ATTENTION: Equipment damage and/or personal injury may result if this parameter is used in an inappropriate application. Do not use this function without considering applicable local, national and international codes, standards, regulations or industry guidelines.	Default: 0 "Disabled" Options: 0 "Disabled" 1 "Enabled"	
		169	[Flying Start En] Enables/disables the function which reconnects to a spinning motor at actual RPM when a start command is issued.	Default: 0 "Disabled" Options: 0 "Disabled" 1 "Enabled"	170
		170	[Flying StartGain] Sets the response of the flying start function.	Default: 4000 Min/Max: 20/32767 Display: 1	169
		174	[Auto Rstrt Tries] Sets the maximum number of times the drive attempts to reset a fault and restart.  ATTENTION: Equipment damage and/or personal injury may result if this parameter is used in an inappropriate application. Do Not use this function without considering applicable local, national and international codes, standards, regulations or industry guidelines.	Default: 0 Min/Max: 0/9 Display: 1	175
		175	[Auto Rstrt Delay] Sets the time between restart attempts (Auto Rstrt Tries) is set to a value other than zero.	Default: 1.0 Secs Min/Max: 0.5/30.0 Secs Display: 0.1 Secs	174


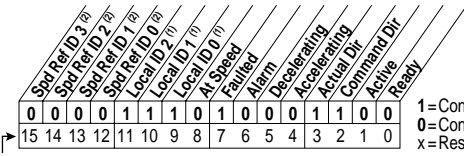
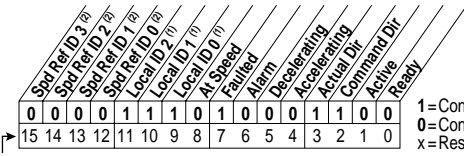
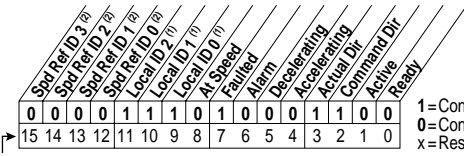
File	Group	No.	Parameter Name & Description	Values	Related
DYNAMIC CONTROL	Restart Modes	178	<div></div> [Sleep-Wake Mode] Enables/disables the Sleep/Wake function. Important: When enabled, the following conditions must be met: <ul style="list-style-type: none">A proper minimum value must be programmed for [Sleep Level].A speed reference must be selected in [Speed Ref A Sel].At least one of the following must be programmed (and input closed) in [Digital Inx Sel]: "Enable," "Stop=CF," "Run," "Run Forward," "Run Reverse."	Default: 0 "Disabled" Options: 0 "Disabled" 1 "Direct" (Enabled)	
		<div></div> ATTENTION: Enabling the Sleep-Wake function can cause unexpected machine operation during the Wake mode. Equipment damage and/or personal injury can result if this parameter is used in an inappropriate application. Do Not use this function without considering the table below and applicable local, national & international codes, standards, regulations or industry guidelines.			
		Sleep / Wake Mode Response			
			After a Drive Fault	After a Normal Stop	
		Input	<i>Run After Digital Input "Clear Faults"</i>	<i>Run After Digital Input or HIM "Stop/CF"</i>	<i>Required for Run</i>
		Stop	Immediate	No restart until Wake Signal*	Stop Closed & Wake Signal* – Stop must be first
		Enable	Immediate		Enable Closed & Wake Signal* – Either one can be first
		Run Run Forward Run Reverse	Immediate	Run & Wake Signal* – Either one can be first	
		* A Wake Signal is produced when the analog value is brought below [Sleep Level] and then brought above [Wake Level] for longer than [Wake Time].			
		179	<div></div> [Sleep-Wake Ref]	Default: 2 "Analog In 2" Options: 1 "Analog In 1" 2 "Analog In 2"	
180	<div></div> [Wake Level]	Default: 6.000 mA, 6.000 Volts Min/Max: [Sleep Level]/20.000 mA, 10.000 Volts Display: 0.001 mA or 0.001 Volts	181		
181	[Wake Time]	Default: 1.0 Secs Min/Max: 0.0/30.0 Secs Display: 0.1 Secs	180		
182	<div></div> [Sleep Level]	Default: 5.000 mA, 5.000 Volts Min/Max: 4.000 mA, 0.000 Volts/[Wake Level] Display: 0.001 mA or 0.001 Volts	183		
183	[Sleep Time]	Default: 1.0 Secs Min/Max: 0.0/30.0 Secs Display: 0.1 Secs	182		

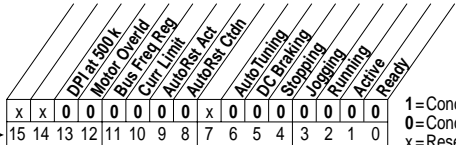
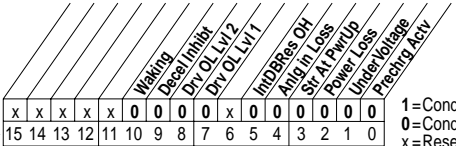
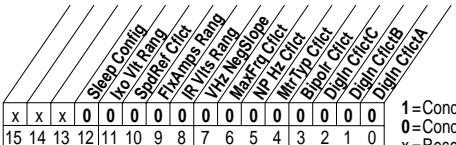
File	Group	No.	Parameter Name & Description	Values	Related
DYNAMIC CONTROL	Power Loss	184	[Power Loss Mode] Sets the reaction to a loss of input power. Power loss is recognized when: <ul style="list-style-type: none"> DC bus voltage is $\leq 73\%$ of [DC Bus Memory] and [Power Loss Mode] is set to "Coast". DC bus voltage is $\leq 82\%$ of [DC Bus Memory] and [Power Loss Mode] is set to "Decel". 	Default: 0 "Coast" Options: 0 "Coast" 1 "Decel" 2 "Continue" 3 "Coast Input" 4 "Decel Input"	013 185
		185	[Power Loss Time] Sets the time that the drive will remain in power loss mode before a fault is issued.	Default: 0.5 Secs Min/Max: 0.0/60.0 Secs Display: 0.1 Secs	184
		186	[Power Loss Level] Sets the level at which the [Power Loss Mode] selection will occur.	Default: Drive Rated Volts Min/Max: 0.0/100.0 VDC Display: 0.1 VDC	

Utility File

File	Group	No.	Parameter Name & Description	Values	Related								
UTILITY	Direction Config	190	[Direction Mode]  Selects the method for changing drive direction. <table><tr><th>Mode</th><th>Direction Change</th></tr><tr><td>Unipolar</td><td>Drive Logic</td></tr><tr><td>Bipolar</td><td>Sign of Reference</td></tr><tr><td>Reverse Dis</td><td>Not Changeable</td></tr></table>	Mode	Direction Change	Unipolar	Drive Logic	Bipolar	Sign of Reference	Reverse Dis	Not Changeable	Default: 0 "Unipolar" Options: 0 "Unipolar" 1 "Bipolar" 2 "Reverse Dis"	320 thru 327 361 thru 366
		Mode	Direction Change										
		Unipolar	Drive Logic										
Bipolar	Sign of Reference												
Reverse Dis	Not Changeable												
192	[Save HIM Ref] Enables a feature to save the present frequency reference value issued by the HIM to Drive memory on power loss. Value is restored to the HIM on power up. <div><p>15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0</p><p>Bit #</p><p>Factory Default Bit Values</p><p>1 = Save at Power Down 0 = Do Not Save x = Reserved</p></div>												
UTILITY	HIM Ref Config	193	[Man Ref Preload] Enables/disables a feature to automatically load the present "Auto" frequency reference value into the HIM when "Manual" is selected. Allows smooth speed transition from "Auto" to "Manual."	Default: 0 "Disabled" Options: 0 "Disabled" 1 "Enabled"									

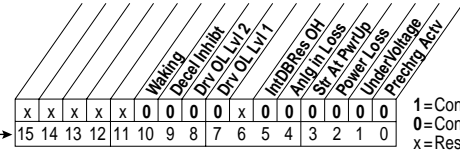
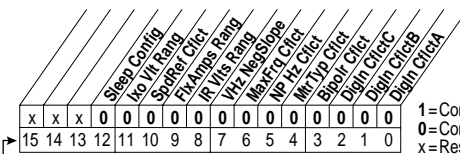
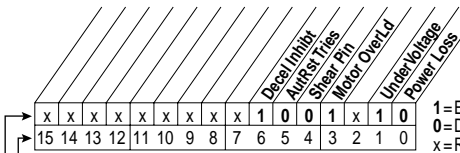
File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	MOP Config	194	[Save MOP Ref] Enables/disables the feature that saves the present MOP frequency reference at power down or at stop.  1 = Save at Power Down 0 = Do Not Save x = Reserved <i>Factory Default Bit Values</i>		
		195	[MOP Rate] Sets rate of change of the MOP reference in response to a digital input.	Default: 1.0 Hz/s Min/Max: 0.2/[Maximum Freq] Display: 0.1 Hz/s	
		196	[Param Access Lvl] Selects the parameter display level. Basic = Reduced param. set Advanced = Full param. set	Default: 0 "Basic" Options: 0 "Basic" 1 "Advanced"	
	Drive Memory	197	[Reset To Defaults]  Resets all parameter values to defaults. Option 1 resets drive to factory settings. Options 2 and 3 will reset drive to alternate voltage and current rating.	Default: 0 "Ready" Options: 0 "Ready" 1 "Factory" 2 "Low Voltage" 3 "High Voltage"	
		198	[Load Frm Usr Set]  Loads a previously saved set of parameter values from a selected user set location in drive nonvolatile memory to active drive memory.	Default: 0 "Ready" Options: 0 "Ready" 1 "User Set 1" 2 "User Set 2" 3 "User Set 3"	199
		199	[Save To User Set] Saves the parameter values in active drive memory to a user set in drive nonvolatile memory.	Default: 0 "Ready" Options: 0 "Ready" 1 "User Set 1" 2 "User Set 2" 3 "User Set 3"	198
		200	[Reset Meters] Resets selected meters to zero.	Default: 0 "Ready" Options: 0 "Ready" 1 "MWh" 2 "Elapsed Time"	

File	Group	No.	Parameter Name & Description	Values	Related																																																																																																																																																																																																																																																																																																																																																																																																																																															
UTILITY	Drive Memory	201	[Language] Selects the display language when using an LCD HIM. This parameter is not functional with an LED HIM.	Default: 0 "Not Selected" Options: 0 "Not Selected" 1 "English" 2 "Francais" 3 "Español" 4 "Italiano" 5 "Deutsch" 6 "Reserved" 7 "Português" 8-9 "Reserved" 10 "Nederlands"																																																																																																																																																																																																																																																																																																																																																																																																																																																
		202	[Voltage Class]  Configures the drive current rating and associates it with the selected voltage (i.e. 400 or 480V). This parameter is normally used when downloading parameter sets.	Default: Based on Drive Cat. No. Options: 2 "Low Voltage" 3 "High Voltage"																																																																																																																																																																																																																																																																																																																																																																																																																																																
		203	[Drive Checksum] Provides a checksum value that indicates whether or not a change in drive programming has occurred.	Default: Read Only Min/Max: 0/65535 Display: 1																																																																																																																																																																																																																																																																																																																																																																																																																																																
	209	[Drive Status 1] Present operating condition of the drive.	Read Only	210																																																																																																																																																																																																																																																																																																																																																																																																																																																
Diagnostics	<table><tr><th colspan="16"></th></tr><tr><th colspan="4">Bits (2)</th><th colspan="12"></th><th colspan="4">Bits (1)</th><th colspan="4"></th></tr><tr><th>15</th><th>14</th><th>13</th><th>12</th><th colspan="8">Description</th><th>11</th><th>10</th><th>9</th><th colspan="8">Description</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td colspan="8">Ref A Auto</td><td>0</td><td>0</td><td>0</td><td colspan="8">Port 0 (TB)</td></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td><td colspan="8">Ref B Auto</td><td>0</td><td>0</td><td>1</td><td colspan="8">Port 1</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td colspan="8">Preset 2 Auto</td><td>0</td><td>1</td><td>0</td><td colspan="8">Port 2</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td colspan="8">Preset 3 Auto</td><td>0</td><td>1</td><td>1</td><td colspan="8">Port 3</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td><td colspan="8">Preset 4 Auto</td><td>1</td><td>0</td><td>0</td><td colspan="8">Port 4</td></tr><tr><td>0</td><td>1</td><td>0</td><td>1</td><td colspan="8">Preset 5 Auto</td><td>1</td><td>0</td><td>1</td><td colspan="8">Port 5</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td><td colspan="8">Preset 6 Auto</td><td>1</td><td>1</td><td>0</td><td colspan="8">Port 6</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td colspan="8">Preset 7 Auto</td><td>1</td><td>1</td><td>1</td><td colspan="8">No Local Control</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td colspan="8">TB Manual</td><td></td><td></td><td></td><td colspan="8"></td></tr><tr><td>1</td><td>0</td><td>0</td><td>1</td><td colspan="8">Port 1 Manual</td><td></td><td></td><td></td><td colspan="8"></td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td><td colspan="8">Port 2 Manual</td><td></td><td></td><td></td><td colspan="8"></td></tr><tr><td>1</td><td>0</td><td>1</td><td>1</td><td colspan="8">Port 3 Manual</td><td></td><td></td><td></td><td colspan="8"></td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td colspan="8">Port 4 Manual</td><td></td><td></td><td></td><td colspan="8"></td></tr><tr><td>1</td><td>1</td><td>0</td><td>1</td><td colspan="8">Port 5 Manual</td><td></td><td></td><td></td><td colspan="8"></td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td><td colspan="8">Port 6 Manual</td><td></td><td></td><td></td><td colspan="8"></td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td colspan="8">Jog Ref</td><td></td><td></td><td></td><td colspan="8"></td></tr></table>																					Bits (2)																Bits (1)								15	14	13	12	Description								11	10	9	Description								0	0	0	0	Ref A Auto								0	0	0	Port 0 (TB)								0	0	0	1	Ref B Auto								0	0	1	Port 1								0	0	1	0	Preset 2 Auto								0	1	0	Port 2								0	0	1	1	Preset 3 Auto								0	1	1	Port 3								0	1	0	0	Preset 4 Auto								1	0	0	Port 4								0	1	0	1	Preset 5 Auto								1	0	1	Port 5								0	1	1	0	Preset 6 Auto								1	1	0	Port 6								0	1	1	1	Preset 7 Auto								1	1	1	No Local Control								1	0	0	0	TB Manual																			1	0	0	1	Port 1 Manual																			1	0	1	0	Port 2 Manual																			1	0	1	1	Port 3 Manual																			1	1	0	0	Port 4 Manual																			1	1	0	1	Port 5 Manual																			1	1	1	0	Port 6 Manual																			1	1	1	1	Jog Ref																		
																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Bits (2)																Bits (1)																																																																																																																																																																																																																																																																																																																																																																																																																																				
15	14	13	12	Description								11	10	9	Description																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	0	0	0	Ref A Auto								0	0	0	Port 0 (TB)																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	0	0	1	Ref B Auto								0	0	1	Port 1																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	0	1	0	Preset 2 Auto								0	1	0	Port 2																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	0	1	1	Preset 3 Auto								0	1	1	Port 3																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	1	0	0	Preset 4 Auto								1	0	0	Port 4																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	1	0	1	Preset 5 Auto								1	0	1	Port 5																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	1	1	0	Preset 6 Auto								1	1	0	Port 6																																																																																																																																																																																																																																																																																																																																																																																																																																					
0	1	1	1	Preset 7 Auto								1	1	1	No Local Control																																																																																																																																																																																																																																																																																																																																																																																																																																					
1	0	0	0	TB Manual																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	0	0	1	Port 1 Manual																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	0	1	0	Port 2 Manual																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	0	1	1	Port 3 Manual																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	1	0	0	Port 4 Manual																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	1	0	1	Port 5 Manual																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	1	1	0	Port 6 Manual																																																																																																																																																																																																																																																																																																																																																																																																																																																
1	1	1	1	Jog Ref																																																																																																																																																																																																																																																																																																																																																																																																																																																

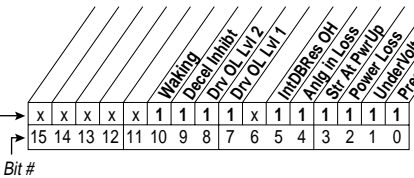
File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	Diagnostics	210	[Drive Status 2] Present operating condition of the drive.  <p>1=Condition True 0=Condition False x=Reserved</p>	Read Only	209
		211	[Drive Alarm 1] Alarm conditions that currently exist in the drive.  <p>1=Condition True 0=Condition False x=Reserved</p>	Read Only	212
		212	[Drive Alarm 2] Alarm conditions that currently exist in the drive.  <p>1=Condition True 0=Condition False x=Reserved</p>	Read Only	211
		213	[Speed Ref Source] Displays the source of the speed reference to the drive.	Default: Read Only Options: <ul style="list-style-type: none"> 0 "PI Output" 1 "Analog In 1" 2 "Analog In 2" 3-8 "Reserved" 9 "MOP Level" 10 "Jog Speed" 11 "Preset Spd1" 12 "Preset Spd2" 13 "Preset Spd3" 14 "Preset Spd4" 15 "Preset Spd5" 16 "Preset Spd6" 17 "Preset Spd7" 18 "DPI Port 1" 19 "DPI Port 2" 20 "DPI Port 3" 21 "DPI Port 4" 22 "DPI Port 5" 	090 093 096 101

File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	Diagnostics	214	[Start Inhibits] Displays the inputs currently preventing the drive from starting.	Read Only 1 = Inhibit True 0 = Inhibit False x = Reserved	
		215	[Last Stop Source] Displays the source that initiated the most recent stop sequence. It will be cleared (set to 0) during the next start sequence.	Default: Read Only Options: 1 "Pwr Removed" 2 "DPI Port 1" 3 "DPI Port 2" 4 "DPI Port 3" 5 "DPI Port 4" 6 "DPI Port 5" 7 "Reserved" 8 "Digital In" 9 "Fault" 10 "Not Enabled" 11 "Sleep" 12 "Jog"	361 362 363 364 365 366
		216	[Dig In Status] Status of the digital inputs.	Read Only 1 = Input Present 0 = Input Not Present x = Reserved	361 thru 366
		217	[Dig Out Status] Status of the digital outputs.	Read Only 1 = Output Energized 0 = Output De-energized x = Reserved	380 thru 384
		218	[Drive Temp] Present operating temperature of the drive power section.	Default: Read Only Min/Max: 0.0/100.0% Display: 0.1%	

File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	Diagnostics	219	[Drive OL Count] Accumulated percentage of drive overload. Continuously operating the drive over 100% of its rating will increase this value to 100% and cause a drive fault.	Default: Read Only Min/Max: 0.0/100.0% Display: 0.1%	150
		220	[Motor OL Count] Accumulated percentage of motor overload. Continuously operating the motor over 100% of the motor overload setting will increase this value to 100% and cause a drive fault.	Default: Read Only Min/Max: 0.0/100.0% Display: 0.1%	047 048
		224	[Fault Frequency] Captures and displays the output frequency of the drive at the time of the last fault.	Default: Read Only Min/Max: 0.0/+ [Maximum Freq] Display: 0.1 Hz	225 thru 230
		225	[Fault Amps] Captures and displays motor amps at the time of the last fault.	Default: Read Only Min/Max: 0.0/[Rated Amps] × 2 Display: 0.1 Amps	224 thru 230
		226	[Fault Bus Volts] Captures and displays the DC bus voltage of the drive at the time of the last fault.	Default: Read Only Min/Max: 0.0/Max Bus Volts Display: 0.1 VDC	224 thru 230
		227	[Status 1 @ Fault] Captures and displays [Drive Status 1] bit pattern at the time of the last fault.	Read Only	209 224 thru 230
			<p>15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0</p> <p>Bit #</p> <p>1 = Condition True 0 = Condition False x = Reserved</p>		
		228	[Status 2 @ Fault] Captures and displays [Drive Status 2] bit pattern at the time of the last fault.	Read Only	210 224 thru 230
			<p>15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0</p> <p>Bit #</p> <p>1 = Condition True 0 = Condition False x = Reserved</p>		

File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	Diagnostics	229	[Alarm 1 @ Fault] Captures and displays [Drive Alarm 1] at the time of the last fault.  <p>15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0</p> <p>Bit #</p> <p>1=Condition True 0=Condition False x=Reserved</p>	Read Only	211 224 thru 230
		230	[Alarm 2 @ Fault] Captures and displays [Drive Alarm 2] at the time of the last fault.  <p>15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0</p> <p>Bit #</p> <p>1=Condition True 0=Condition False x=Reserved</p>	Read Only	212 224 thru 230
		234	[Testpoint 1 Sel]	Default: 499	
		236	[Testpoint 2 Sel] Selects the function whose value is displayed value in [Testpoint x Data]. These are internal values that are not accessible through parameters. See Testpoint Codes and Functions on page 4-10 for a listing of available codes and functions.	Min/Max: 0/999 Display: 1	
	Faults	235	[Testpoint 1 Data]	Default: Read Only	
		237	[Testpoint 2 Data]	Min/Max: 0/65535 Display: 1	
		327	The present value of the function selected in [Testpoint x Sel].		
	Faults	238	[Fault Config 1] Enables/disables annunciation of the listed faults.  <p>15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0</p> <p>Bit #</p> <p>Factory Default Bit Values</p> <p>1=Enabled 0=Disabled x=Reserved</p>		
		240	[Fault Clear] Resets a fault and clears the fault queue.	Default: 0 "Ready" Options: 0 "Ready" 1 "Clear Faults" 2 "Clr Flt Que"	


File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	Faults	241	[Fault Clear Mode] Enables/disables a fault reset (clear faults) attempt from any source. This does not apply to fault codes which are cleared indirectly via other actions.	Default: 1 "Enabled" Options: 0 "Disabled" 1 "Enabled"	
		242 ▽ ³²	[Power Up Marker] Elapsed hours since initial drive power up. This value will rollover to 0 after the drive has been powered on for more than the max value shown. For relevance to most recent power up see [Fault x Time].	Default: Read Only Min/Max: 0.0000/429,496.7295 Hr Display: 0.0001 Hrs	244 246 248 250 252 254 256 258
		243 245 247 249 251 253 255 257	[Fault 1 Code] [Fault 2 Code] [Fault 3 Code] [Fault 4 Code] [Fault 5 Code] [Fault 6 Code] [Fault 7 Code] [Fault 8 Code] A code that represents a drive fault. The codes will appear in these parameters in the order they occur ([Fault 1 Code] = the most recent fault).	Default: Read Only Min/Max: 0000/9999 Display: 0000	
		244 246 248 250 252 254 256 258 ▽ ³²	[Fault 1 Time] [Fault 2 Time] [Fault 3 Time] [Fault 4 Time] [Fault 5 Time] [Fault 6 Time] [Fault 7 Time] [Fault 8 Time] The time between initial drive power up and the occurrence of the associated fault. Can be compared to [Power Up Marker] for the time from the most recent power up. [Fault x Time] – [Power Up Marker] = Time difference to the most recent power up. A negative value indicates fault occurred before most recent power up. A positive value indicates fault occurred after most recent power up.	Default: Read Only Min/Max: 0.0000/429,496.7295 Hr Display: 0.0001 Hrs	242


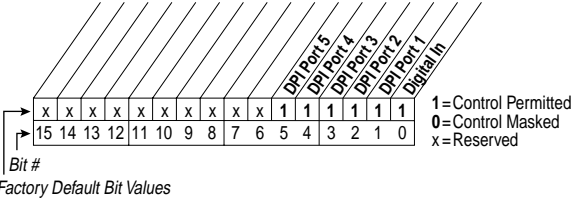









File	Group	No.	Parameter Name & Description	Values	Related
UTILITY	Alarms	259	[Alarm Config 1] Enables/disables alarm conditions that will initiate an active drive alarm.  Bit # Factory Default Bit Values		
		261	[Alarm Clear] Resets all [Alarm 1-8 Code] parameters to zero.	Default: 0 "Ready" Options: 0 "Ready" 1 "Clr Alrm Que"	262 263 264 265 266 267 268 269
		262	[Alarm 1 Code]	Default: Read Only	261
		263	[Alarm 2 Code]	Min/Max: 0/256	
		264	[Alarm 3 Code]	Display: 1	
		265	[Alarm 4 Code]		
		266	[Alarm 5 Code]		
		267	[Alarm 6 Code]		
		268	[Alarm 7 Code]		
		269	[Alarm 8 Code]		
			A code that represents a drive alarm. The codes will appear in the order they occur (first 4 alarms in – first 4 out alarm queue). A time stamp is not available with alarms.		

Communication File





COMMUNICATION

Comm Control


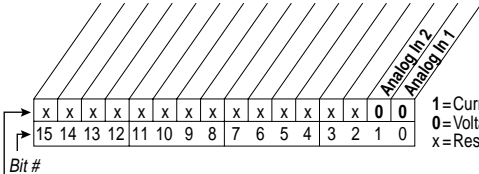
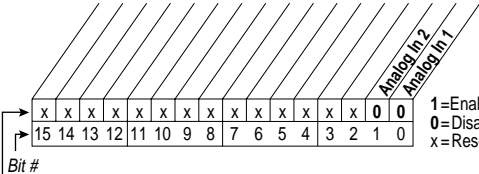
File	Group	No.	Parameter Name & Description	Values	Related																																																																							
		270	<div></div> [DPI Data Rate] Sets the baud rate for attached drive peripherals. When changing this value the drive must be reset for the change to take affect.	Default: 0 "125 kbps" Options: 0 "125 kbps" 1 "500 kbps"																																																																								
		271	[Drive Logic Rslt] The final logic command resulting from the combination of all DPI and discrete inputs. This parameter has the same structure as the product-specific logic command received via DPI and is used in peer to peer communications. <div><div><div>MOP Dec</div><div>Slip Ref ID 2 ^(H)</div><div>Slip Ref ID 1 ^(H)</div><div>Slip Ref ID 0 ^(H)</div><div>Decel 2</div><div>Decel 1</div><div>Accel 2</div><div>Accel 1</div><div>MOP Inc</div><div>Reverse</div><div>Local Control</div><div>Forward</div><div>Clear Fault</div><div>Log</div><div>Start</div><div>Stop</div></div><table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td></tr><tr><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr></table><div>1 = Condition True 0 = Condition False x = Reserved</div></div> <div>Bit #</div> <table><tr><th colspan="3">Bits⁽¹⁾</th><th rowspan="2">Description</th></tr><tr><th>14</th><th>13</th><th>12</th></tr><tr><td>0</td><td>0</td><td>0</td><td>No Command - Man. Mode</td></tr><tr><td>0</td><td>0</td><td>1</td><td>Ref A Auto</td></tr><tr><td>0</td><td>1</td><td>0</td><td>Ref B Auto</td></tr><tr><td>0</td><td>1</td><td>1</td><td>Preset 3 Auto</td></tr><tr><td>1</td><td>0</td><td>0</td><td>Preset 4 Auto</td></tr><tr><td>1</td><td>0</td><td>1</td><td>Preset 5 Auto</td></tr><tr><td>1</td><td>1</td><td>0</td><td>Preset 6 Auto</td></tr><tr><td>1</td><td>1</td><td>1</td><td>Preset 7 Auto</td></tr></table>	0	0	0	0	1	1	1	0	1	0	0	0	1	1	0	0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Bits ⁽¹⁾			Description	14	13	12	0	0	0	No Command - Man. Mode	0	0	1	Ref A Auto	0	1	0	Ref B Auto	0	1	1	Preset 3 Auto	1	0	0	Preset 4 Auto	1	0	1	Preset 5 Auto	1	1	0	Preset 6 Auto	1	1	1	Preset 7 Auto	Read Only	
0	0	0	0	1	1	1	0	1	0	0	0	1	1	0	0																																																													
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																																																													
Bits ⁽¹⁾			Description																																																																									
14	13	12																																																																										
0	0	0	No Command - Man. Mode																																																																									
0	0	1	Ref A Auto																																																																									
0	1	0	Ref B Auto																																																																									
0	1	1	Preset 3 Auto																																																																									
1	0	0	Preset 4 Auto																																																																									
1	0	1	Preset 5 Auto																																																																									
1	1	0	Preset 6 Auto																																																																									
1	1	1	Preset 7 Auto																																																																									
		272	[Drive Ref Rslt] Present frequency reference scaled as a DPI reference for peer to peer communications. The value shown is the value prior to the accel/decel ramp and the corrections supplied by slip comp, PI, etc.	Default: Read Only Min/Max: 0-32767 Display: 1																																																																								
		273	[Drive Ramp Rslt] Present frequency reference scaled as a DPI reference for peer to peer communications. The value shown is the value after the accel/decel ramp, but prior to any corrections supplied by slip comp, PI, etc.	Default: Read Only Min/Max: 0-32767 Display: 1																																																																								

File	Group	No.	Parameter Name & Description	Values	Related
COMMUNICATION	Masks & Owners	276	[Logic Mask]  Determines which adapters can control the drive. If the bit for an adapter is set to "0," the adapter will have no control functions except for stop.	 <p>1 = Control Permitted 0 = Control Masked x = Reserved</p> <p>Factory Default Bit Values</p>	288 thru 297
		277	[Start Mask]  Controls which adapters can issue start commands.	See [Logic Mask] .	288 thru 297
		278	[Jog Mask]  Controls which adapters can issue jog commands.	See [Logic Mask] .	288 thru 297
		279	[Direction Mask]  Controls which adapters can issue forward/reverse direction commands.	See [Logic Mask] .	288 thru 297
		280	[Reference Mask]  Controls which adapters can select an alternate reference; [Speed Ref A, B Sel] or [Preset Speed 1-7].	See [Logic Mask] .	288 thru 297
		281	[Accel Mask]  Controls which adapters can select [Accel Time 1, 2].	See [Logic Mask] .	288 thru 297
		282	[Decel Mask]  Controls which adapters can select [Decel Time 1, 2].	See [Logic Mask] .	288 thru 297
		283	[Fault Clr Mask]  Controls which adapters can clear a fault.	See [Logic Mask] .	288 thru 297
		284	[MOP Mask]  Controls which adapters can issue MOP commands to the drive.	See [Logic Mask] .	288 thru 297
		285	[Local Mask]  Controls which adapters are allowed to take exclusive control of drive logic commands (except stop). Exclusive "local" control can only be taken while the drive is stopped.	See [Logic Mask] .	288 thru 297


File	Group	No.	Parameter Name & Description	Values	Related
COMMUNICATIONS	Masks & Owners	288	[Stop Owner] Adapters that are presently issuing a valid stop command. 	Read Only	276 thru 285
		289	[Start Owner] Adapters that are presently issuing a valid start command.	See [Stop Owner] .	276 thru 285
		290	[Jog Owner] Adapters that are presently issuing a valid jog command.	See [Stop Owner] .	276 thru 285
		291	[Direction Owner] Adapter that currently has exclusive control of direction changes.	See [Stop Owner] .	276 thru 285
		292	[Reference Owner] Adapter that has the exclusive control of the command frequency source selection.	See [Stop Owner] .	276 thru 285
		293	[Accel Owner] Adapter that has exclusive control of selecting [Accel Time 1, 2].	See [Stop Owner] .	140 276 thru 285
		294	[Decel Owner] Adapter that has exclusive control of selecting [Decel Time 1, 2].	See [Stop Owner] .	142 276 thru 285
		295	[Fault Clr Owner] Adapter that is presently clearing a fault.	See [Stop Owner] .	276 thru 285
		296	[MOP Owner] Adapters that are currently issuing increases or decreases in MOP command frequency.	See [Stop Owner] .	276 thru 285
		297	[Local Owner] Adapter that has requested exclusive control of all drive logic functions. If an adapter is in local lockout, all other functions (except stop) on all other adapters are locked out and non-functional. Local control can only be obtained when the drive is not running.	See [Stop Owner] .	276 thru 285

File	Group	No.	Parameter Name & Description	Values	Related
COMMUNICATIONS	Datalinks	300 301 	[Data In A1] - Link A Word 1 [Data In A2] - Link A Word 2 Parameter number whose value will be written from a communications device data table. Parameters that can only be changed while drive is stopped cannot be used as Datalink inputs. Entering a parameter of this type will "Disable" the link. Refer to the manual that came with your communications option for datalink information.	Default: 0 (0 = "Disabled") Min/Max: 0/387 Display: 1	
		302 303 	[Data In B1] - Link B Word 1 [Data In B2] - Link B Word 2	See [Data In A1] - Link A Word 1.	
		304 305 	[Data In C1] - Link C Word 1 [Data In C2] - Link C Word 2	See [Data In A1] - Link A Word 1.	
		306 307 	[Data In D1] - Link D Word 1 [Data In D2] - Link D Word 2	See [Data In A1] - Link A Word 1.	
		310 311	[Data Out A1] - Link A Word 1 [Data Out A2] - Link A Word 2 Parameter number whose value will be written to a communications device data table.	Default: 0 (0 = "Disabled") Min/Max: 0/387 Display: 1	
		312 313	[Data Out B1] - Link B Word 1 [Data Out B2] - Link B Word 2	See [Data Out A1] - Link A Word 1.	
		314 315	[Data Out C1] - Link C Word 1 [Data Out C2] - Link C Word 2	See [Data Out A1] - Link A Word 1.	
		316 317	[Data Out D1] - Link D Word 1 [Data Out D2] - Link D Word 2	See [Data Out A1] - Link A Word 1.	

Inputs & Outputs File

File	Group	No.	Parameter Name & Description	Values	Related
INPUTS & OUTPUTS	Analog Inputs	320	[Anlg In Config]  Selects the mode for the analog inputs.	 <p>1 = Current 0 = Voltage x = Reserved</p> <p>Factory Default Bit Values</p>	322 325 323 326
		321	[Anlg In Sqr Root] Enables/disables the square root function for each input.	 <p>1 = Enable 0 = Disable x = Reserved</p> <p>Factory Default Bit Values</p>	
		322	[Analog In 1 Hi]	Default: 10.0 Volt	091
		325	[Analog In 2 Hi] Sets the highest input value to the analog input x scaling block.	10.0 Volt Min/Max: 4.000/20.000mA -/+10.0V 0.0/10.0V Display: 0.001 mA or 0.1 Volt	092
		323	[Analog In 1 Lo]	Default: 0.0 Volt	091
		326	[Analog In 2 Lo] Sets the lowest input value to the analog input x scaling block.	0.0 Volt Min/Max: 4.000/20.000mA -/+10.0V Display: 0.0/10.0V 0.001 mA or 0.1 Volt	092
		324	[Analog In 1 Loss]	Default: 0 "Disabled"	091
		327	[Analog In 2 Loss] Selects drive action when an analog signal loss is detected. Signal loss is defined as an analog signal less than 1V or 2mA. The signal loss event ends and normal operation resumes when the input signal level is greater than or equal to 1.5V or 3mA.	0 "Disabled" Options: 0 "Disabled" 1 "Fault" 2 "Hold Input" 3 "Set Input Lo" 4 "Set Input Hi" 5 "Goto Preset1" 6 "Hold OutFreq"	092

File	Group	No.	Parameter Name & Description	Values	Related
INPUTS & OUTPUTS	Analog Outputs	340	[Anlg Out Config] Selects the mode for the analog outputs. 0 = Voltage Mode, 1 = Current Mode. <div> <p>Bit #</p> <p>Factory Default Bit Values</p> </div>		
		341	[Anlg Out Absolut] Selects whether the signed value or absolute value of a parameter is used before being scaled to drive the analog output. <div> <p>Bit #</p> <p>Factory Default Bit Values</p> </div>		
		342	[Analog Out1 Sel] Selects the source of the value that drives the analog output.	Default: 0 "Output Freq" Options: See Table	001 002 003 004 005 007 006 012 135 136 137 138 220 219
		343	[Analog Out1 Hi] Sets the analog output value when the source value is at maximum.	Default: 20.0 mA, 10.0 Volts Min/Max: 0.0/20.0 mA, 0.0/10.0 Volts Display: 0.1 mA or 0.1 Volts	340 342
		344	[Analog Out1 Lo] Sets the analog output value when the source value is at minimum.	Default: 0.0 mA, 0.0 Volts Min/Max: 0.0/20.0 mA, 0.0/10.0 Volts Display: 0.1 mA or 0.1 Volts	340 342

File	Group	No.	Parameter Name & Description	Values	Related
INPUTS & OUTPUTS	Digital Inputs	361	[Digital In1 Sel]	Default: 4 "Stop – CF" (CF = Clear Fault)	100 156 162 096 140 194 380 124
		362	[Digital In2 Sel]	Default: 5 "Start"	
		363	[Digital In3 Sel]	Default: 10 "Jog"	
		364	[Digital In4 Sel]	Default: 15 "Speed Sel 1"	
		365	[Digital In5 Sel]	Default: 16 "Speed Sel 2"	
		366	[Digital In6 Sel]	Default: 17 "Speed Sel 3"	
			Selects the function for the digital inputs.	Options: 0 "Not Used"	
		(1)	When [Digital Inx Sel] is set to option 2 "Clear Faults" the Stop button cannot be used to clear a fault condition.	1 "Enable" ⁽⁶⁾⁽⁸⁾	
		(2)	Typical 3-Wire Inputs. Requires that only 3-wire functions are chosen. Including 2-wire selections will cause a type 2 alarm.	2 "Clear Faults" ⁽¹⁾	
		(3)	Typical 2-Wire Inputs. Requires that only 2-wire functions are chosen. Including 3-wire selections will cause a type 2 alarm.	3 "Aux Fault"	
		(4)	Speed Select Inputs.	4 "Stop – CF" ⁽²⁾⁽⁸⁾	
				5 "Start" ⁽²⁾⁽⁷⁾	
				6 "Fwd/ Reverse" ⁽²⁾	
				7 "Run" ⁽³⁾⁽⁸⁾	
				8 "Run Forward" ⁽³⁾	
				9 "Run Reverse" ⁽³⁾	
				10 "Jog" ⁽²⁾	
				11 "Jog Forward"	
				12 "Jog Reverse"	
				13 "Stop Mode B"	
				14 "Bus Reg Md B"	
				15 "Speed Sel 1" ⁽⁴⁾	
				16 "Speed Sel 2" ⁽⁴⁾	
				17 "Speed Sel 3" ⁽⁴⁾	
				18 "Auto/ Manual" ⁽⁵⁾	
				19 "Local"	
				20 "Acc2 & Dec2"	
				21 "Accel 2"	
				22 "Decel 2"	
				23 "MOP Inc"	
				24 "MOP Dec"	
				25 "Excl Link"	
				26 "PI Enable"	
				27 "PI Hold"	
				28 "PI Reset"	
				29 "Pwr Loss Lvl"	
				30 "Precharge En"	

INPUTS & OUTPUTS

Parameter Cross Reference – by Name

<u>Parameter Name</u>	<u>No.</u>	<u>Group</u>	<u>Parameter Name</u>	<u>No.</u>	<u>Group</u>
Accel Mask	281	Masks & Owners	DC Brake Lvl Sel	157	Stop/Brake Modes
Accel Owner	293	Masks & Owners	DC Brake Time	159	Stop/Brake Modes
Accel Time x	140, 141	Ramp Rates	DC Bus Memory	013	Metering
Alarm 1 @ Fault	229	Diagnostics	DC Bus Voltage	012	Metering
Alarm 2 @ Fault	230	Diagnostics	Decel Mask	282	Masks & Owners
Alarm Clear	261	Alarms	Decel Owner	294	Masks & Owners
Alarm Config 1	259	Alarms	Decel Time x	142, 143	Ramp Rates
Alarmx Code	262-269	Alarms	Dig In Status	216	Diagnostics
Analog Inx Hi	322, 325	Analog Inputs	Dig Out Status	217	Diagnostics
Analog Inx Lo	323, 326	Analog Inputs	Dig Outx Level	381, 385	Digital Outputs
Analog Inx Value	016, 017	Metering	Dig Outx OffTime	383, 387	Digital Outputs
Analog Out Absolut	341	Analog Outputs	Dig Outx OnTime	382, 386	Digital Outputs
Analog Out1 Hi	343	Analog Outputs	Digital Inx Sel	361-366	Digital Inputs
Analog Out1 Lo	344	Analog Outputs	Digital Outx Sel	380, 384	Digital Outputs
Analog Out1 Sel	342	Analog Outputs	Direction Mask	279	Masks & Owners
Anlg In Config	320	Analog Inputs	Direction Mode	190	Reverse Config
Anlg In Sqr Root	321	Analog Inputs	Direction Owner	291	Masks & Owners
Anlg Inx Loss	324, 327	Analog Inputs	DPI Data Rate	270	Comm Control
Anlg Out Config	340	Analog Outputs	Drive Alarm x	211, 212	Diagnostics
Auto Rstrt Delay	175	Restart Modes	Drive Checksum	203	Drive Memory
Auto Rstrt Tries	174	Restart Modes	Drive Logic Rslt	271	Comm Control
Autotune	061	Torq Attributes	Drive OL Count	219	Diagnostics
Break Frequency	072	Volts per Hertz	Drive OL Mode	150	Load Limits
Break Voltage	071	Volts per Hertz	Drive Ramp Rslt	273	Comm Control
Bus Reg Kd	165	Stop/Brake Modes	Drive Ref Rslt	272	Comm Control
Bus Reg Ki	160	Stop/Brake Modes	Drive Status x	209, 210	Diagnostics
Bus Reg Kp	164	Stop/Brake Modes	Drive Temp	218	Diagnostics
Bus Reg Mode x	161, 162	Stop/Brake Modes	Elapsed MWh	009	Metering
Commanded Freq	002	Metering	Elapsed Run Time	010	Metering
Compensation	056	Torq Attributes	Fault Amps	225	Diagnostics
Control SW Ver	029	Drive Data	Fault Bus Volts	226	Diagnostics
Current Lmt Gain	149	Load Limits	Fault Clear	240	Faults
Current Lmt Sel	147	Load Limits	Fault Clear Mode	241	Faults
Current Lmt Val	148	Load Limits	Fault Clr Mask	283	Masks & Owners
Data In A1	300	Data Links	Fault Clr Owner	295	Masks & Owners
Data In A2	301	Data Links	Fault Config 1	238	Faults
Data In B1	302	Data Links	Fault Frequency	224	Diagnostics
Data In B2	303	Data Links	Fault x Code	243-257	Faults
Data In C1	304	Data Links	Fault x Time	244-258	Faults
Data In C2	305	Data Links	Flux Current	005	Metering
Data In D1	306	Data Links	Flux Current Ref	063	Torq Attributes
Data In D2	307	Data Links	Flux Up Mode	057	Torq Attributes
Data Out A1	310	Data Links	Flux Up Time	058	Torq Attributes
Data Out A2	311	Data Links	Flying Start En	169	Restart Modes
Data Out B1	312	Data Links	Flying StartGain	170	Restart Modes
Data Out B2	313	Data Links	IR Voltage Drop	062	Torq Attributes
Data Out C1	314	Data Links	IXo Voltage Drop	064	Torq Attributes
Data Out C2	315	Data Links	Jog Mask	278	Masks & Owners
Data Out D1	316	Data Links	Jog Owner	290	Masks & Owners
Data Out D2	317	Data Links	Jog Speed	100	Discrete Speeds
DB Resistor Type	163	Stop/Brake Modes	Language	201	Drive Memory
DC Brake Level	158	Stop/Brake Modes	Last Stop Source	215	Diagnostics

Parameter Name	No.	Group	Parameter Name	No.	Group
Load Frm Usr Set	198	Drive Memory	Reset Meters	200	Drive Memory
Local Mask	285	Masks & Owners	Reset To Defaults	197	Drive Memory
Local Owner	297	Masks & Owners	Run Boost	070	Volts per Hertz
Logic Mask	276	Masks & Owners	S Curve %	146	Ramp Rates
Man Ref Preload	193	HIM Config	Save HIM Ref	192	HIM Config
Maximum Freq	055	Torq Attributes	Save MOP Ref	194	MOP Config
Maximum Speed	082	Spd Mode & Limits	Save To User Set	199	Drive Memory
Maximum Voltage	054	Torq Attributes	Skip Freq Band	087	Spd Mode & Limits
Minimum Speed	081	Spd Mode & Limits	Skip Frequency x	084-086	Spd Mode & Limits
MOP Frequency	011	Metering	Sleep Level	182	Restart Modes
MOP Mask	284	Masks & Owners	Sleep Time	183	Restart Modes
MOP Owner	296	Masks & Owners	Sleep-Wake Mode	178	Restart Modes
MOP Rate	195	MOP Config	Sleep-Wake Ref	179	Restart Modes
Motor NP FLA	042	Motor Data	Slip Comp Gain	122	Slip Comp
Motor NP Hertz	043	Motor Data	Slip RPM @ FLA	121	Slip Comp
Motor NP Power	045	Motor Data	Slip RPM Meter	123	Slip Comp
Motor NP RPM	044	Motor Data	Speed Mode	080	Spd Mode & Limits
Motor NP Volts	041	Motor Data	Speed Ref A Hi	091	Speed References
Motor OL Count	220	Diagnostics	Speed Ref A Lo	092	Speed References
Motor OL Factor	048	Motor Data	Speed Ref A Sel	090	Speed References
Motor OL Hertz	047	Motor Data	Speed Ref B Hi	094	Speed References
Motor Type	040	Motor Data	Speed Ref B Lo	095	Speed References
Mtr NP Pwr Units	046	Motor Data	Speed Ref B Sel	093	Speed References
Output Current	003	Metering	Speed Ref Source	213	Diagnostics
Output Freq	001	Metering	Start At PowerUp	168	Restart Modes
Output Power	007	Metering	Start Inhibits	214	Diagnostics
Output Powr Fctr	008	Metering	Start Mask	277	Masks & Owners
Output Voltage	006	Metering	Start Owner	289	Masks & Owners
Overspeed Limit	083	Spd Mode & Limits	Start/Acc Boost	069	Volts per Hertz
Param Access Lvl	196	Drive Memory	Status 1 @ Fault	227	Diagnostics
PI Configuration	124	Process PI	Status 2 @ Fault	228	Diagnostics
PI Control	125	Process PI	Stop Mode x	155, 156	Stop/Brake Modes
PI Error Meter	137	Process PI	Stop Owner	288	Masks & Owners
PI Fdbck Meter	136	Process PI	SV Boost Filter	059	Torq Attributes
PI Feedback Sel	128	Process PI	TB Man Ref Hi	097	Speed References
PI Integral Time	129	Process PI	TB Man Ref Lo	098	Speed References
PI Lower Limit	131	Process PI	TB Man Ref Sel	096	Speed References
PI Output Meter	138	Process PI	Testpoint x Data	235, 237	Diagnostics
PI Preload	133	Process PI	Testpoint x Sel	234, 236	Diagnostics
PI Prop Gain	130	Process PI	Torque Current	004	Metering
PI Ref Meter	135	Process PI	Torque Perf Mode	053	Torq Attributes
PI Reference Sel	126	Process PI	Trim Hi	119	Speed Trim
PI Setpoint	127	Process PI	Trim In Select	117	Speed Trim
PI Status	134	Process PI	Trim Lo	120	Speed Trim
PI Upper Limit	132	Process PI	Trim Out Select	118	Speed Trim
Power Loss Level	186	Power Loss	Voltage Class	202	Drive Memory
Power Loss Mode	184	Power Loss	Wake Level	180	Restart Modes
Power Loss Time	185	Power Loss	Wake Time	181	Restart Modes
Power Up Marker	242	Faults			
Preset Speed x	101-107	Discrete Speeds			
PWM Frequency	151	Load Limits			
Rated Amps	028	Drive Data			
Rated kW	026	Drive Data			
Rated Volts	027	Drive Data			
Reference Mask	280	Masks & Owners			
Reference Owner	292	Masks & Owners			

Parameter Cross Reference – by Number

<u>No.</u>	<u>Parameter Name</u>	<u>Group</u>	<u>No.</u>	<u>Parameter Name</u>	<u>Group</u>
001	Output Freq	Metering	094	Speed Ref B Hi	Speed References
002	Commanded Freq	Metering	095	Speed Ref B Lo	Speed References
003	Output Current	Metering	096	TB Man Ref Sel	Speed References
004	Torque Current	Metering	097	TB Man Ref Hi	Speed References
005	Flux Current	Metering	098	TB Man Ref Lo	Speed References
006	Output Voltage	Metering	100	Jog Speed	Discrete Speeds
007	Output Power	Metering	101-107	Preset Speed x	Discrete Speeds
008	Output Powr Fctr	Metering	117	Trim In Select	Speed Trim
009	Elapsed MWh	Metering	118	Trim Out Select	Speed Trim
010	Elapsed Run Time	Metering	119	Trim Hi	Speed Trim
011	MOP Frequency	Metering	120	Trim Lo	Speed Trim
012	DC Bus Voltage	Metering	121	Slip RPM @ FLA	Slip Comp
013	DC Bus Memory	Metering	122	Slip Comp Gain	Slip Comp
016, 017	Analog Inx Value	Metering	123	Slip RPM Meter	Slip Comp
026	Rated kW	Drive Data	124	PI Configuration	Process PI
027	Rated Volts	Drive Data	125	PI Control	Process PI
028	Rated Amps	Drive Data	126	PI Reference Sel	Process PI
029	Control SW Ver	Drive Data	127	PI Setpoint	Process PI
040	Motor Type	Motor Data	128	PI Feedback Sel	Process PI
041	Motor NP Volts	Motor Data	129	PI Integral Time	Process PI
042	Motor NP FLA	Motor Data	130	PI Prop Gain	Process PI
043	Motor NP Hertz	Motor Data	131	PI Lower Limit	Process PI
044	Motor NP RPM	Motor Data	132	PI Upper Limit	Process PI
045	Motor NP Power	Motor Data	133	PI Preload	Process PI
046	Mtr NP Pwr Units	Motor Data	134	PI Status	Process PI
047	Motor OL Hertz	Motor Data	135	PI Ref Meter	Process PI
048	Motor OL Factor	Motor Data	136	PI Fdbck Meter	Process PI
053	Torque Perf Mode	Torq Attributes	137	PI Error Meter	Process PI
054	Maximum Voltage	Torq Attributes	138	PI Output Meter	Process PI
055	Maximum Freq	Torq Attributes	140, 141	Accel Time x	Ramp Rates
056	Compensation	Torq Attributes	142, 143	Decel Time x	Ramp Rates
057	Flux Up Mode	Torq Attributes	146	S Curve %	Ramp Rates
058	Flux Up Time	Torq Attributes	147	Current Lmt Sel	Load Limits
059	SV Boost Filter	Torq Attributes	148	Current Lmt Val	Load Limits
061	Autotune	Torq Attributes	149	Current Lmt Gain	Load Limits
062	IR Voltage Drop	Torq Attributes	150	Drive OL Mode	Load Limits
063	Flux Current Ref	Torq Attributes	151	PWM Frequency	Load Limits
064	IXo Voltage Drop	Torq Attributes	155, 156	Stop Mode x	Stop/Brake Modes
069	Start/Acc Boost	Volts per Hertz	157	DC Brake Lvl Sel	Stop/Brake Modes
070	Run Boost	Volts per Hertz	158	DC Brake Level	Stop/Brake Modes
071	Break Voltage	Volts per Hertz	159	DC Brake Time	Stop/Brake Modes
072	Break Frequency	Volts per Hertz	160	Bus Reg Ki	Stop/Brake Modes
080	Speed Mode	Spd Mode & Limits	161, 162	Bus Reg Mode x	Stop/Brake Modes
081	Minimum Speed	Spd Mode & Limits	163	DB Resistor Type	Stop/Brake Modes
082	Maximum Speed	Spd Mode & Limits	164	Bus Reg Kp	Stop/Brake Modes
083	Overspeed Limit	Spd Mode & Limits	165	Bus Reg Kd	Stop/Brake Modes
084-086	Skip Frequency x	Spd Mode & Limits	168	Start At PowerUp	Restart Modes
087	Skip Freq Band	Spd Mode & Limits	169	Flying Start En	Restart Modes
090	Speed Ref A Sel	Speed References	170	Flying StartGain	Restart Modes
091	Speed Ref A Hi	Speed References	174	Auto Rstrl Tries	Restart Modes
092	Speed Ref A Lo	Speed References	175	Auto Rstrl Delay	Restart Modes
093	Speed Ref B Sel	Speed References	178	Sleep-Wake Mode	Restart Modes

No.	Parameter Name	Group	No.	Parameter Name	Group
179	Sleep-Wake Ref	Restart Modes	279	Direction Mask	Masks & Owners
180	Wake Level	Restart Modes	280	Reference Mask	Masks & Owners
181	Wake Time	Restart Modes	281	Accel Mask	Masks & Owners
182	Sleep Level	Restart Modes	282	Decel Mask	Masks & Owners
183	Sleep Time	Restart Modes	283	Fault Clr Mask	Masks & Owners
184	Power Loss Mode	Power Loss	284	MOP Mask	Masks & Owners
185	Power Loss Time	Power Loss	285	Local Mask	Masks & Owners
186	Power Loss Level	Power Loss	288	Stop Owner	Masks & Owners
190	Direction Mode	Reverse Config	289	Start Owner	Masks & Owners
192	Save HIM Ref	HIM Config	290	Jog Owner	Masks & Owners
193	Man Ref Preload	HIM Config	291	Direction Owner	Masks & Owners
194	Save MOP Ref	MOP Config	292	Reference Owner	Masks & Owners
195	MOP Rate	MOP Config	293	Accel Owner	Masks & Owners
196	Param Access Lvl	Drive Memory	294	Decel Owner	Masks & Owners
197	Reset To Defaults	Drive Memory	295	Fault Clr Owner	Masks & Owners
198	Load Frm Usr Set	Drive Memory	296	MOP Owner	Masks & Owners
199	Save To User Set	Drive Memory	297	Local Owner	Masks & Owners
200	Reset Meters	Drive Memory	300	Data In A1	Data Links
201	Language	Drive Memory	301	Data In A2	Data Links
202	Voltage Class	Drive Memory	302	Data In B1	Data Links
203	Drive Checksum	Drive Memory	303	Data In B2	Data Links
209, 210	Drive Status x	Diagnostics	304	Data In C1	Data Links
211, 212	Drive Alarm x	Diagnostics	305	Data In C2	Data Links
213	Speed Ref Source	Diagnostics	306	Data In D1	Data Links
214	Start Inhibits	Diagnostics	307	Data In D2	Data Links
215	Last Stop Source	Diagnostics	310	Data Out A1	Data Links
216	Dig In Status	Diagnostics	311	Data Out A2	Data Links
217	Dig Out Status	Diagnostics	312	Data Out B1	Data Links
218	Drive Temp	Diagnostics	313	Data Out B2	Data Links
219	Drive OL Count	Diagnostics	314	Data Out C1	Data Links
220	Motor OL Count	Diagnostics	315	Data Out C2	Data Links
224	Fault Frequency	Diagnostics	316	Data Out D1	Data Links
225	Fault Amps	Diagnostics	317	Data Out D2	Data Links
226	Fault Bus Volts	Diagnostics	320	Anlg In Config	Analog Inputs
227	Status 1 @ Fault	Diagnostics	321	Anlg In Sqr Root	Analog Inputs
228	Status 2 @ Fault	Diagnostics	322, 325	Analog Inx Hi	Analog Inputs
229	Alarm 1 @ Fault	Diagnostics	323, 326	Analog Inx Lo	Analog Inputs
230	Alarm 2 @ Fault	Diagnostics	324, 327	Anlg Inx Loss	Analog Inputs
234, 236	Testpoint x Sel	Diagnostics	340	Anlg Out Config	Analog Outputs
235, 237	Testpoint x Data	Diagnostics	341	Analog Out Absolut	Analog Outputs
238	Fault Config 1	Faults	342	Analog Out1 Sel	Analog Outputs
240	Fault Clear	Faults	343	Analog Out1 Hi	Analog Outputs
241	Fault Clear Mode	Faults	344	Analog Out1 Lo	Analog Outputs
242	Power Up Marker	Faults	361-366	Digital Inx Sel	Digital Inputs
243-257	Fault x Code	Faults	380, 384	Digital Outx Sel	Digital Outputs
244-258	Fault x Time	Faults	381, 385	Dig Outx Level	Digital Outputs
259	Alarm Config 1	Alarms	382, 386	Dig Outx OnTime	Digital Outputs
261	Alarm Clear	Alarms	383, 387	Dig Outx OffTime	Digital Outputs
262-269	Alarmx Code	Alarms			
270	DPI Data Rate	Comm Control			
271	Drive Logic Rslt	Comm Control			
272	Drive Ref Rslt	Comm Control			
273	Drive Ramp Rslt	Comm Control			
276	Logic Mask	Masks & Owners			
277	Start Mask	Masks & Owners			
278	Jog Mask	Masks & Owners			

Troubleshooting

Chapter 4 provides information to guide you in troubleshooting the PowerFlex 700. Included is a listing and description of drive faults (with possible solutions, when applicable) and alarms.

For information on...	See page...
Faults and Alarms	4-1
Drive Status	4-2
Manually Clearing Faults	4-3
Fault Descriptions	4-4
Clearing Alarms	4-7
Alarm Descriptions	4-8
Testpoint Codes and Functions	4-10
Common Symptoms and Corrective Actions	4-10

Faults and Alarms

A fault is a condition that stops the drive. There are three fault types.

Type	Fault Description
① Auto-Reset Run	When this type of fault occurs, and [Auto Rstrt Tries] (see page 3-20) is set to a value greater than "0," a user-configurable timer, [Auto Rstrt Delay] (see page 3-20) begins. When the timer reaches zero, the drive attempts to automatically reset the fault. If the condition that caused the fault is no longer present, the fault will be reset and the drive will be restarted.
② Non-Resettable	This type of fault normally requires drive or motor repair. The cause of the fault must be corrected before the fault can be cleared. The fault will be reset on power up after repair.
③ User Configurable	These faults can be enabled/disabled to annunciate or ignore a fault condition.

An alarm is a condition that, if left untreated, may stop the drive. There are two alarm types.

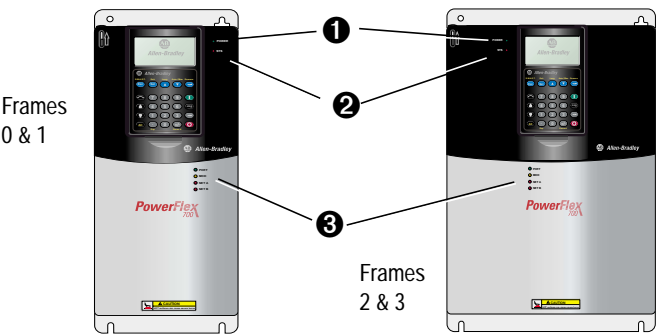
Type	Alarm Description
① User Configurable	These alarms can be enabled or disabled through [Alarm Config 1] on page 3-30 .
② Non-Configurable	These alarms are always enabled.

Drive Status

The condition or state of your drive is constantly monitored. Any changes will be indicated through the front panel LEDs and/or the HIM (if present).

LED Indications

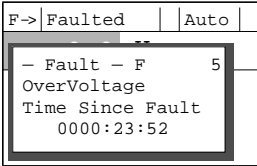
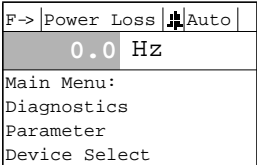
Figure 4.1 Drive Status Indicators





#	Name	Color	State	Description
1	PWR (Power)	Green	Steady	Illuminates when power is applied to the drive.
2	STS (Status)	Green	Flashing	Drive ready, but not running & no faults are present.
			Steady	Drive running, no faults are present.
		Yellow	Flashing	A type 2 (non-configurable) alarm condition exists, drive continues to run.
			Steady	A type 1 (user configurable) alarm condition exists, but drive continues to run.
		Red	Flashing	A fault has occurred.
			Steady	A non-resettable fault has occurred.
3	PORT	Green	–	Status of DPI port internal communications (if present).
	MOD	Yellow	–	Status of communications module (when installed).
	NET A	Red	–	Status of network (if connected).
	NET B	Red	–	Status of secondary network (if connected).

HIM Indication

The LCD HIM also provides visual notification of a fault or alarm condition.

Condition	Display
Drive is indicating a fault. The LCD HIM immediately reports the fault condition by displaying the following. <ul style="list-style-type: none"> • “Faulted” appears in the status line • Fault number • Fault name • Time that has passed since fault occurred Press Esc to regain HIM control.	
Drive is indicating an alarm. The LCD HIM immediately reports the alarm condition by displaying the following. <ul style="list-style-type: none"> • Alarm name (Type 2 alarms only) • Alarm bell graphic 	

Manually Clearing Faults

Step	Key(s)
1. Press Esc to acknowledge the fault. The fault information will be removed so that you can use the HIM.	
2. Address the condition that caused the fault. The cause must be corrected before the fault can be cleared.	
3. After corrective action has been taken, clear the fault by one of these methods. <ul style="list-style-type: none"> • Press Stop • Cycle drive power • Set parameter 240 [Fault Clear] to “1.” 	

Fault Descriptions

Table 4.A Fault Types, Descriptions and Actions

Fault	No.	Type ⁽¹⁾	Description	Action
Analog In Loss	29	① ③	An analog input is configured to fault on signal loss. A signal loss has occurred. Configure with [Anlg In 1, 2 Loss] on page 3-35 .	1. Check parameters. 2. Check for broken/loose connections at inputs.
Anlg Cal Chksum	108		The checksum read from the analog calibration data does not match the checksum calculated.	Replace drive.
Auto Rstrt Tries	33	③	Drive unsuccessfully attempted to reset a fault and resume running for the programmed number of [Flt RstRun Tries]. Enable/Disable with [Fault Config 1] on page 3-30 .	Correct the cause of the fault and manually clear.
AutoTune Aborted	80		The autotune function was canceled by the user.	Restart procedure.
Auxiliary Input	2	①	Auxiliary input interlock is open.	Check remote wiring.
DB Resistance	69		Resistance of the internal DB resistor is out of range.	Replace resistor.
Decel Inhibit	24	③	The drive is not following a commanded deceleration because it is attempting to limit bus voltage.	1. Verify input voltage is within drive specified limits. 2. Verify system ground impedance follows proper grounding techniques. 3. Disable bus regulation and/or add dynamic brake resistor and/or extend deceleration time.
Drive OverLoad	64		Drive rating of 110% for 1 minute or 150% for 3 seconds has been exceeded.	Reduce load or extend Accel Time.
Excessive Load	79		Motor did not come up to speed in the allotted time.	1. Uncouple load from motor. 2. Repeat Autotune.
FluxAmpsRef Rang	78		The value for flux amps determined by the Autotune procedure exceeds the programmed [Motor NP FLA].	1. Reprogram [Motor NP FLA] with the correct motor nameplate value. 2. Repeat Autotune.
Ground Fault	13	①	A current path to earth ground greater than 25% of drive rating.	Check the motor and external wiring to the drive output terminals for a grounded condition.

Fault	No.	Type ⁽¹⁾	Description	Action
Heatsink OvrTemp	8	①	Heatsink temperature exceeds 100% of [Drive Temp].	<ol style="list-style-type: none"> 1. Verify that maximum ambient temperature has not been exceeded. 2. Check fan. 3. Check for excess load.
HW OverCurrent	12	①	The drive output current has exceeded the hardware current limit.	Check programming. Check for excess load, improper DC boost setting, DC brake volts set too high or other causes of excess current.
Incompat MCB-PB	106	②	Drive rating information stored on the power board is incompatible with the main control board.	Load compatible version files into drive.
IR Volts Range	77		The drive auto tuning default is "Calculate" and the value calculated for IR Drop Volts is not in the range of acceptable values.	Re-enter motor nameplate data.
Motor Overload	7	① ③	<p>Internal electronic overload trip.</p> <p>Enable/Disable with [Fault Config 1] on page 3-30.</p>	An excessive motor load exists. Reduce load so drive output current does not exceed the current set by [Motor NP FLA].
OverSpeed Limit	25	①	Functions such as Slip Compensation or Bus Regulation have attempted to add an output frequency adjustment greater than that programmed in [Overspeed Limit].	Remove excessive load or overhauling conditions or increase [Overspeed Limit].
OverVoltage	5	①	DC bus voltage exceeded maximum value.	Monitor the AC line for high line voltage or transient conditions. Bus overvoltage can also be caused by motor regeneration. Extend the decel time or install dynamic brake option.
Parameter Chksum	100	②	The checksum read from the board does not match the checksum calculated.	<ol style="list-style-type: none"> 1. Restore defaults. 2. Reload User Set if used.
Params Defaulted	48		The drive was commanded to write default values to EEPROM.	<ol style="list-style-type: none"> 1. Clear the fault or cycle power to the drive. 2. Program the drive parameters as needed.
Phase U to Grnd	38		A phase to ground fault has been detected between the drive and motor in this phase.	<ol style="list-style-type: none"> 1. Check the wiring between the drive and motor. 2. Check motor for grounded phase. 3. Replace drive.
Phase V to Grnd	39			
Phase W to Grnd	40			
Phase UV Short	41		Excessive current has been detected between these two output terminals.	<ol style="list-style-type: none"> 1. Check the motor and drive output terminal wiring for a shorted condition. 2. Replace drive.
Phase VW Short	42			
Phase UW Short	43			

Fault	No.	Type ⁽¹⁾	Description	Action
Port 1-6 DPI Loss	81-86		DPI port stopped communicating. A SCANport device was connected to a drive operating DPI devices at 500k baud.	<ol style="list-style-type: none"> 1. If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters, Main Control Board or complete drive as required. 2. Check HIM connection. 3. If an adapter was intentionally disconnected and the [Logic Mask] bit for that adapter is set to "1", this fault will occur. To disable this fault, set the [Logic Mask] bit for the adapter to "0."
Port 1-6 Adapter	71-76		The network card connected to DPI port stopped communicating.	<ol style="list-style-type: none"> 1. Check communication adapter board for proper connection to external network. 2. Check external wiring to adapter on port. 3. Verify external network fault.
Power Loss	3	① ③	DC bus voltage remained below 85% of nominal for longer than [Power Loss Time]. Enable/Disable with [Fault Config 1] on page 3-30 .	Monitor the incoming AC line for low voltage or line power interruption.
Power Unit	70		One or more of the output transistors were operating in the active region instead of desaturation. This can be caused by excessive transistor current or insufficient base drive voltage.	<ol style="list-style-type: none"> 1. Check for damaged output transistors. 2. Replace drive.
Pwr Brd Chksum1	104		The checksum read from the EEPROM does not match the checksum calculated from the EEPROM data.	Clear the fault or cycle power to the drive.
Pwr Brd Chksum2	105	②	The checksum read from the board does not match the checksum calculated.	<ol style="list-style-type: none"> 1. Cycle power to the drive. 2. If problem persists, replace drive.
Replaced MCB-PB	107	②	Main Control Board was replaced and parameters were not programmed.	<ol style="list-style-type: none"> 1. Restore defaults. 2. Reprogram parameters.
Shear Pin	63	③	Programmed [Current Lmt Val] has been exceeded. Enable/Disable with [Fault Config 1] on page 3-30 .	Check load requirements and [Current Lmt Val] setting.
SW OverCurrent	36	①	The drive output current has exceeded the hardware current.	Check for excess load, improper DC boost setting. DC brake volts set too high.

Fault	No.	Type ⁽¹⁾	Description	Action
Trnsistr OvrTemp	9	①	Output transistors have exceeded their maximum operating temperature.	1. Verify that maximum ambient temperature has not been exceeded. 2. Check fan. 3. Check for excess load.
UnderVoltage	4	① ③	DC bus voltage fell below the minimum value of 407V DC at 400/480V input or 204V DC at 200/240V input. Enable/Disable with [Fault Config 1] (page 3-30).	Monitor the incoming AC line for low voltage or power interruption.
UserSet1 Chksum	101	②	The checksum read from the user set does not match the checksum calculated.	Re-save user set.
UserSet2 Chksum	102	②		
UserSet3 Chksum	103	②		

⁽¹⁾ See [page 4-1](#) for a description of fault types.

Table 4.B Fault Cross Reference

No. ⁽¹⁾	Fault	No. ⁽¹⁾	Fault	No. ⁽¹⁾	Fault
2	Auxiliary Input	38	Phase U to Grnd	78	FluxAmpsRef Rang
3	Power Loss	39	Phase V to Grnd	79	Excessive Load
4	UnderVoltage	40	Phase W to Grnd	80	AutoTune Aborted
5	OverVoltage	41	Phase UV Short	81-86	Port 1-6 DPI Loss
7	Motor Overload	42	Phase UW Short	100	Parameter Chksum
8	Heatsink OvrTemp	43	Phase VW Short	101	UserSet1 Chksum
9	Trnsistr OvrTemp	48	Params Defaulted	102	UserSet2 Chksum
12	HW OverCurrent	63	Shear Pin	103	UserSet3 Chksum
13	Ground Fault	64	Drive Overload	104	Pwr Brd Chksum1
24	Decel Inhibit	69	DB Resistance	105	Pwr Brd Chksum2
25	OverSpeed Limit	70	Power Unit	106	Incompat MCB-PB
29	Analog In Loss	71-76	Port 1-6 Adapter	107	Replaced MCB-PB
33	Auto Rstrt Tries	77	IR Volts Range	108	Anlg Cal Chksum
36	SW OverCurrent				

⁽¹⁾ Fault numbers not listed are reserved for future use.

Clearing Alarms

Alarms are automatically cleared when the condition that caused the alarm is no longer present.

Alarm Descriptions

Table 4.C Alarm Descriptions and Actions

Alarm	No.	Type ⁽¹⁾	Description																																																																																																				
Analog In Loss	5	①	An analog input is configured for "Alarm" on signal loss and signal loss has occurred.																																																																																																				
Bipolar Conflict	20	②	Parameter 190 [Direction Mode] is set to "Bipolar" or "Reverse Dis" and one or more of the following digital input functions is configured: "Fwd/Reverse," "Run Forward," "Run Reverse," "Jog Forward" or "Jog Reverse."																																																																																																				
Decel Inhibit	10	①	Drive is being inhibited from decelerating.																																																																																																				
Dig In ConflictA	17	②	Digital input functions are in conflict. Combinations marked with a "⚡" will cause an alarm. <table><tr><td></td><td>Acc2/Dec2</td><td>Accel 2</td><td>Decel 2</td><td>Jog</td><td>Jog Fwd</td><td>Jog Rev</td><td>Fwd/Rev</td></tr><tr><td>Acc2 / Dec2</td><td></td><td>⚡</td><td>⚡</td><td></td><td></td><td></td><td></td></tr><tr><td>Accel 2</td><td>⚡</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Decel 2</td><td>⚡</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Jog</td><td></td><td></td><td></td><td></td><td>⚡</td><td>⚡</td><td></td></tr><tr><td>Jog Fwd</td><td></td><td></td><td></td><td>⚡</td><td></td><td></td><td>⚡</td></tr><tr><td>Jog Rev</td><td></td><td></td><td></td><td>⚡</td><td></td><td></td><td>⚡</td></tr><tr><td>Fwd / Rev</td><td></td><td></td><td></td><td></td><td>⚡</td><td>⚡</td><td></td></tr></table>		Acc2/Dec2	Accel 2	Decel 2	Jog	Jog Fwd	Jog Rev	Fwd/Rev	Acc2 / Dec2		⚡	⚡					Accel 2	⚡							Decel 2	⚡							Jog					⚡	⚡		Jog Fwd				⚡			⚡	Jog Rev				⚡			⚡	Fwd / Rev					⚡	⚡																																					
	Acc2/Dec2	Accel 2	Decel 2	Jog	Jog Fwd	Jog Rev	Fwd/Rev																																																																																																
Acc2 / Dec2		⚡	⚡																																																																																																				
Accel 2	⚡																																																																																																						
Decel 2	⚡																																																																																																						
Jog					⚡	⚡																																																																																																	
Jog Fwd				⚡			⚡																																																																																																
Jog Rev				⚡			⚡																																																																																																
Fwd / Rev					⚡	⚡																																																																																																	
Dig In ConflictB	18	②	A digital Start input has been configured without a Stop input or other functions are in conflict. Combinations that conflict are marked with a "⚡" and will cause an alarm. <table><tr><td></td><td>Start</td><td>Stop-CF</td><td>Run</td><td>Run Fwd</td><td>Run Rev</td><td>Jog</td><td>Jog Fwd</td><td>Jog Rev</td><td>Fwd/Rev</td></tr><tr><td>Start</td><td></td><td></td><td>⚡</td><td>⚡</td><td>⚡</td><td></td><td>⚡</td><td>⚡</td><td></td></tr><tr><td>Stop-CF</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Run</td><td>⚡</td><td></td><td></td><td>⚡</td><td>⚡</td><td></td><td>⚡</td><td>⚡</td><td></td></tr><tr><td>Run Fwd</td><td>⚡</td><td></td><td>⚡</td><td></td><td></td><td>⚡</td><td></td><td></td><td>⚡</td></tr><tr><td>Run Rev</td><td>⚡</td><td></td><td>⚡</td><td></td><td></td><td>⚡</td><td></td><td></td><td>⚡</td></tr><tr><td>Jog</td><td></td><td></td><td></td><td>⚡</td><td>⚡</td><td></td><td></td><td></td><td></td></tr><tr><td>Jog Fwd</td><td>⚡</td><td></td><td>⚡</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Jog Rev</td><td>⚡</td><td></td><td>⚡</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Fwd / Rev</td><td></td><td></td><td></td><td>⚡</td><td>⚡</td><td></td><td></td><td></td><td></td></tr></table>		Start	Stop-CF	Run	Run Fwd	Run Rev	Jog	Jog Fwd	Jog Rev	Fwd/Rev	Start			⚡	⚡	⚡		⚡	⚡		Stop-CF										Run	⚡			⚡	⚡		⚡	⚡		Run Fwd	⚡		⚡			⚡			⚡	Run Rev	⚡		⚡			⚡			⚡	Jog				⚡	⚡					Jog Fwd	⚡		⚡							Jog Rev	⚡		⚡							Fwd / Rev				⚡	⚡				
	Start	Stop-CF	Run	Run Fwd	Run Rev	Jog	Jog Fwd	Jog Rev	Fwd/Rev																																																																																														
Start			⚡	⚡	⚡		⚡	⚡																																																																																															
Stop-CF																																																																																																							
Run	⚡			⚡	⚡		⚡	⚡																																																																																															
Run Fwd	⚡		⚡			⚡			⚡																																																																																														
Run Rev	⚡		⚡			⚡			⚡																																																																																														
Jog				⚡	⚡																																																																																																		
Jog Fwd	⚡		⚡																																																																																																				
Jog Rev	⚡		⚡																																																																																																				
Fwd / Rev				⚡	⚡																																																																																																		
Dig In ConflictC	19	②	More than one physical input has been configured to the same input function. Multiple configurations are not allowed for the following input functions. <table><tr><td>Forward/Reverse</td><td>Run Reverse</td><td>Bus Regulation Mode B</td></tr><tr><td>Speed Select 1</td><td>Jog Forward</td><td>Acc2 / Dec2</td></tr><tr><td>Speed Select 2</td><td>Jog Reverse</td><td>Accel 2</td></tr><tr><td>Speed Select 3</td><td>Run</td><td>Decel 2</td></tr><tr><td>Run Forward</td><td>Stop Mode B</td><td></td></tr></table>	Forward/Reverse	Run Reverse	Bus Regulation Mode B	Speed Select 1	Jog Forward	Acc2 / Dec2	Speed Select 2	Jog Reverse	Accel 2	Speed Select 3	Run	Decel 2	Run Forward	Stop Mode B																																																																																						
Forward/Reverse	Run Reverse	Bus Regulation Mode B																																																																																																					
Speed Select 1	Jog Forward	Acc2 / Dec2																																																																																																					
Speed Select 2	Jog Reverse	Accel 2																																																																																																					
Speed Select 3	Run	Decel 2																																																																																																					
Run Forward	Stop Mode B																																																																																																						
Drive OL Level 1	8	①	The calculated IGBT temperature requires a reduction in PWM frequency. If [Drive OL Mode] is disabled and the load is not reduced, an overload fault will eventually occur.																																																																																																				
Drive OL Level 2	9	①	The calculated IGBT temperature requires a reduction in Current Limit. If [Drive OL Mode] is disabled and the load is not reduced, an overload fault will eventually occur.																																																																																																				

Alarm	No.	Type ⁽¹⁾	Description
FluxAmpsRef Rang	26	②	Result of autotune procedure.
IntDBRes OvrHeat	6	①	The drive has temporarily disabled the DB regulator because the resistor temperature has exceeded a predetermined value.
IR Volts Range	25	②	The drive auto tuning default is "Calculate" and the value calculated for IR Drop Volts is not in the range of acceptable values. This alarm should clear when all motor nameplate data is properly entered.
Ixo Vlt Rang	28	②	Motor leakage inductance is out of range.
MaxFreq Conflict	23	②	The sum of [Maximum Speed] and [Overspeed Limit] exceeds [Maximum Freq]. Raise [Maximum Freq] or lower [Maximum Speed] and/or [Overspeed Limit] so that the sum is less than or equal to [Maximum Freq].
Motor Type Cflct	21	②	[Motor Type] has been set to "Synchr Reluc" or "Synchr PM" and one or more of the following exist: <ul style="list-style-type: none"> • [Torque Perf Mode] = "Sensrls Vect," "SV Economize" or "Fan/Pmp V/Hz." • [Flux Up Time] is greater than 0.0 Secs. • [Speed Mode] is set to "Slip Comp." • [Autotune] = "Static Tune" or "Rotate Tune."
NP Hz Conflict	22	②	Fan/pump mode is selected in [Torq Perf Mode] and the ratio of [Motor NP Hertz] to [Maximum Freq] is greater than 26.
Power Loss	3	①	Drive has sensed a power line loss.
Precharge Active	1	①	Drive is in the initial DC bus precharge state.
Sleep Config	29	②	Sleep/Wake configuration error. With [Sleep-Wake Mode] = "Direct," possible causes include: drive is stopped and [Wake Level] < [Sleep Level], "Stop=CF," "Run," "Run Forward," or "Run Reverse." is not configured in [Digital Inx Sel].
Speed Ref Cflct	27	②	[Speed Ref x Sel] or [PI Reference Sel] is set to "Reserved".
Start At PowerUp	4	①	[Start At PowerUp] is enabled. Drive may start at any time within 10 seconds of drive powerup.
UnderVoltage	2	①	The bus voltage has dropped below a predetermined value.
VHz Neg Slope	24	②	[Torq Perf Mode] = "Custom V/Hz" & the V/Hz slope is negative.
Waking	11	①	The Wake timer is counting toward a value that will start the drive.

⁽¹⁾ See [page 4-1](#) for a description of alarm types.

Table 4.D Alarm Cross Reference

No. ⁽¹⁾	Alarm
1	Precharge Active
2	UnderVoltage
3	Power Loss
4	Start At PowerUp
5	Analog in Loss
6	IntDBRes OvrHeat
8	Drive OL Level 1
9	Drive OL Level 2

No. ⁽¹⁾	Alarm
10	Decel Inhibit
11	Waking
17	Dig In ConflictA
18	Dig In ConflictB
19	Dig In ConflictC
20	Bipolar Conflict
21	Motor Type Cflct
22	NP Hz Conflict

No. ⁽¹⁾	Alarm
23	MaxFreq Conflict
24	VHz Neg Slope
25	IR Volts Range
26	FluxAmpsRef Rang
27	Speed Ref Cflct
28	Ixo Vlt Rang
29	Sleep Config

⁽¹⁾ Alarm numbers not listed are reserved for future use.

Testpoint Codes and Functions

Code Selected in [Testpoint x Sel]	Function Whose Value is Displayed in [Testpoint x Data]
1	DPI Error Status
2	Heatsink Temperature
3	Active Current Limit
4	Active PWM Frequency
5	Lifetime MegaWatt Hours ⁽¹⁾
6	Lifetime Run Time
7	Lifetime Powered Up Time
8	Lifetime Power Cycles
9	Life MegaWatt Hours Fraction ⁽¹⁾
10	Life MegaWatt Hours Fraction Units ⁽¹⁾
11-99	Reserved for Factory Use

⁽¹⁾ Use the equation below to calculate total Lifetime MegaWatt Hours.

$$\left(\frac{\text{Value of Code 9}}{\text{Value of Code 10}} \times 0.1 \right) + \text{Value of Code 5} = \text{Total Lifetime MegaWatt Hours}$$

Common Symptoms and Corrective Actions

Drive does not Start from Start or Run Inputs wired to the terminal block.

Cause(s)	Indication	Corrective Action
Drive is Faulted	Flashing red status light	Clear fault. <ul style="list-style-type: none">• Press Stop• Cycle power• Set [Fault Clear] to 1 (See page 3-28)
Incorrect input wiring. See page 1-12 for wiring examples. <ul style="list-style-type: none">• 2 wire control requires Run, Run Forward, Run Reverse or Jog input.• 3 wire control requires Start and Stop inputs• Jumper from terminal 7 to 8 is required.	None	Wire inputs correctly and/or install jumper.

Cause(s)	Indication	Corrective Action
Incorrect digital input programming. <ul style="list-style-type: none"> Mutually exclusive choices have been made (i.e., Jog and Jog Forward). 2 wire and 3 wire programming may be conflicting. Exclusive functions (i.e., direction control) may have multiple inputs configured. Stop is factory default and is not wired. 	None Flashing yellow status light and "DigIn CflctB" indication on LCD HIM. [Drive Status 2] shows type 2 alarm(s).	Program [Digital Inx Sel] for correct inputs. (See page 3-37) Start or Run programming may be missing. Program [Digital Inx Sel] to resolve conflicts. (See page 3-37) Remove multiple selections for the same function. Install stop button to apply a signal at stop terminal.

Drive does not Start from HIM.

Cause(s)	Indication	Corrective Action
Drive is programmed for 2 wire control. HIM Start button is disabled for 2 wire control.	None	If 2 wire control is required, no action is necessary. If 3 wire control is required, program [Digital Inx Sel] for correct inputs. (See page 3-37)

Drive does not respond to changes in speed command.

Cause(s)	Indication	Corrective Action
No value is coming from the source of the command.	LCD HIM Status Line indicates "At Speed" and output is 0 Hz.	1. If the source is an analog input, check wiring and use a meter to check for presence of signal. 2. Check [Commanded Freq] for correct source. (See page 3-8)
Incorrect reference source has been programmed.	None	3. Check [Speed Ref Source] for the source of the speed reference. (See page 3-25) 4. Reprogram [Speed Ref A Sel] for correct source. (See page 3-13)
Incorrect Reference source is being selected via remote device or digital inputs.	None	5. Check [Drive Status 1], bits 12 and 13 for unexpected source selections. (See page 3-24) 6. Check [Dig In Status] to see if inputs are selecting an alternate source. (See page 3-26) 7. Reprogram digital inputs to correct "Speed Sel x" option. (See page 3-37)

Motor and/or drive will not accelerate to commanded speed.

Cause(s)	Indication	Corrective Action
Acceleration time is excessive.	None	Reprogram [Accel Time x]. (See page 3-18)
Excess load or short acceleration times force the drive into current limit, slowing or stopping acceleration.	None	Check [Drive Status 2], bit 10 to see if the drive is in Current Limit. (See page 3-25) Remove excess load or reprogram [Accel Time x]. (See page 3-18)
Speed command source or value is not as expected.	None	Check for the proper Speed Command using Steps 1 through 7 above.
Programming is preventing the drive output from exceeding limiting values.	None	Check [Maximum Speed] (See page 3-12) and [Maximum Freq] (See page 3-10) to assure that speed is not limited by programming.

Motor operation is unstable.

Cause(s)	Indication	Corrective Action
Motor data was incorrectly entered or Autotune was not performed.	None	1. Correctly enter motor nameplate data. 2. Perform "Static" or "Rotate" Autotune procedure. (Param #061, page 3-11)

Drive will not reverse motor direction.

Cause(s)	Indication	Corrective Action
Digital input is not selected for reversing control.	None	Check [Digital Inx Sel] (See page 3-37). Choose correct input and program for reversing mode.
Digital input is incorrectly wired.	None	Check input wiring. (See page 1-8)
Direction mode parameter is incorrectly programmed.	None	Reprogram [Direction Mode] for analog "Bipolar" or digital "Unipolar" control. (See page 3-22)
Motor wiring is improperly phased for reverse.	None	Switch two motor leads.
A bipolar analog speed command input is incorrectly wired or signal is absent.	None	1. Use meter to check that an analog input voltage is present. 2. Check wiring. (See page 1-8) Positive voltage commands forward direction. Negative voltage commands reverse direction.

Stopping the drive results in a Decel Inhibit fault.

Cause(s)	Indication	Corrective Action
The bus regulation feature is enabled and is halting deceleration due to excessive bus voltage. Excess bus voltage is normally due to excessive regenerated energy or unstable AC line input voltages. Internal timer has halted drive operation.	Decel Inhibit fault screen. LCD Status Line indicates "Faulted".	1. See Attention statement on Preface-4 . 2. Reprogram bus regulation (parameters 161 and 162) to eliminate any "Adjust Freq" selection. 3. Disable bus regulation (parameters 161 & 162) and add a dynamic brake. 4. Correct AC input line instability or add an isolation transformer. 5. Reset drive.

Supplemental Drive Information

For information on . .	See page . .
Output Devices	A-1
Drive, Fuse & Circuit Breaker Ratings	A-1

Output Devices

Common mode cores are internal to the drive. For information on output devices such as output contactors, cable terminators and output reactors refer to the *PowerFlex Reference Manual*.

Drive, Fuse & Circuit Breaker Ratings

The tables on the following pages provide PowerFlex 700 drive ratings (including continuous, 1 minute, and 3 second) and recommended AC input line fuses and circuit breakers.

Fuse Size

Fuse sizes are the recommended minimum size based on 40 degrees C ambient, 75 degree C wire and the U.S. N.E.C. Other country, state or local codes may require different fuse/circuit breaker ratings.

Fuse Type

The recommended fuse type is listed below. If available amp ratings do not match the tables provided, the fuse rating that exceeds the drive continuous rating should be chosen.

- IEC
BS88 (British Standard) Parts 1 & 2⁽¹⁾, EN60269-1, Parts 1 & 2, type gG or equivalent should be used for these drives.
- UL
UL requirements specify that UL Class CC, T or J fuses must be used for all drives in this section⁽²⁾.
 - (1) Typical designations include, but may not be limited to the following: Parts 1 & 2: AC, AD, BC, BD, CD, DD, ED, EFS, EF, FF, FG, GF, GG, GH.
 - (2) Typical designations include: Type CC - KTK-R, FNQ-R
Type J - JKS, LPJ
Type T - JJS, JJN

Table A.A 208/240 Volt AC Input Recommended Protection Devices

Drive Catalog Number	Frame	HP Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾	140M Motor Starter with Adjustable Current Range ⁽⁵⁾⁽⁶⁾			
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Amps	Amps	Available Catalog Numbers ⁽⁷⁾			
208 Volt AC Input																		
20BB2P2	0	0.5	0.33	1.9	0.7	2.5	2.7	3.7	3	6	3	10	15	3	140M-C2E-B25	140M-D8E-B25	–	–
20BB4P2	0	1	0.75	3.7	1.3	4.8	5.5	7.4	6	10	6	17.5	15	7	140M-C2E-B63	140M-D8E-B63	–	–
20BB6P8	0	2	1.5	6.8	2.4	7.8	10.3	13.8	10	15	10	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–
20BB9P6	0	3	2	9.5	3.4	11	12.1	16.5	12	20	12	40	40	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–
20BB015	1	5	3	15.7	5.7	17.5	19.2	26.2	20	35	20	70	70	30	140M-C2E-C20	140M-D8E-C20	140M-F8E-C20	–
20BB022	1	7.5	5	23.0	8.3	25.3	27.8	37.9	30	50	30	100	100	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140M-CMN-2500
20BB028	2	10	7.5	29.6	10.7	32.2	37.9	50.6	40	70	40	125	125	50	–	–	140M-F8E-C32	140M-CMN-4000
20BB042	3	15	10	44.5	16.0	48.3	53	72.5	60	100	60	175	175	70	–	–	140M-F8E-C45	140M-CMN-6300
20BB054	3	20	15	57.2	20.6	62.1	72.5	97	80	125	80	225	225	100	–	–	–	140M-CMN-6300
240 Volt AC Input																		
20BB2P2	0	0.5	0.33	1.7	0.7	2.2	2.4	3.3	3	6	3	10	15	15	140M-C2E-B25	140M-D8E-B25	–	–
20BB4P2	0	1	0.75	3.3	1.4	4.2	4.8	6.4	5	8	5	15	15	15	140M-C2E-B63	140M-D8E-B63	–	–
20AB6P8	0	2	1.5	5.9	2.4	6.8	9	12	10	15	10	25	25	25	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–
20BB9P6	0	3	2	8.3	3.4	9.6	10.6	14.4	12	20	12	35	35	35	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–
20BB015	1	5	3	13.7	5.7	15.3	17.4	23.2	20	30	20	60	60	60	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–
20BB022	1	7.5	5	19.9	8.3	22	24.2	33	25	50	25	80	80	80	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	140M-CMN-2500
20BB028	2	10	7.5	25.7	10.7	28	33	44	35	60	35	100	100	100	–	–	140M-F8E-C32	140M-CMN-4000
20BB042	3	15	10	38.5	16.0	42	46.2	63	50	90	50	150	150	150	–	–	140M-F8E-C45	140M-CMN-6300
20BB054	3	20	15	49.5	20.6	54	63	84	70	100	70	200	200	200	–	–	–	140M-CMN-6300

See [page A-4](#) for Notes.

Table A.B 400/480 Volt AC Input Recommended Protection Devices

Drive Catalog Number	Frame	kW/HP Rating		Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾	140M Motor Starter with Adjustable Current Range ⁽⁵⁾⁽⁶⁾			
		ND	HD	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Amps	Amps	Available Catalog Numbers ⁽⁷⁾			
400 Volt AC Input																		
20BC2P1	0	0.75	0.55	1.7	1.2	2.1	2.4	3.2	3	6	3	8	15	3	140M-C2E-B25	140M-D8E-B25	–	–
20BC3P5	0	1.5	0.75	3.1	2.1	3.5	4.5	6.0	6	8	6	12	15	7	140M-C2E-B40	140M-D8E-B40	–	–
20BC5P0	0	2.2	1.5	4.5	3.2	5.0	5.5	7.5	6	10	6	20	20	7	140M-C2E-B63	140M-D8E-B63	–	–
20BC8P7	0	4	2.2	8.2	5.7	8.7	9.9	13.2	15	17.5	15	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–
20BC011	0	5.5	4	11.0	7.6	11.5	13	17.4	15	25	15	45	45	15	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–
20BC015	1	7.5	5.5	15.1	10.4	15.4	17.2	23.1	20	30	20	60	60	20	140M-C2E-C20	140M-D8E-C20	140M-F8E-C20	–
20BC022	1	11	7.5	21.9	15.2	22	24.2	33	30	45	30	80	80	30	140M-C2E-C25	140M-D8E-C25	140M-F8E-C25	–
20BC030	2	15	11	30.3	21.0	30	33	45	40	60	40	120	120	50	–	–	140M-F8E-C32	–
20BC037	3	18.5	15	37.7	26.1	37	45	60	50	80	50	125	125	50	–	–	140M-F8E-C45	–
20BC043	3	22	18.5	44.1	30.6	43	56	74	60	90	60	150	150	80	–	–	–	–
480 Volt AC Input																		
20BD2P1	0	1	–	1.6	1.4	2.1	2.4	3.2	3	6	3	8	15	3	140M-C2E-B25	–	–	–
20BD3P4	0	2	1.5	2.6	2.2	3.4	4.5	6.0	4	8	4	12	15	7	140M-C2E-B40	140M-D8E-B40	–	–
20BD5P0	0	3	2	3.9	3.2	5.0	5.5	7.5	6	10	6	20	20	7	140M-C2E-C63	140M-D8E-C63	–	–
20BD8P0	0	5	3	6.9	5.7	8.0	8.8	12	10	15	10	30	30	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–
20BD011	0	7.5	5	9.5	7.9	11	12.1	16.5	15	20	15	40	40	15	140M-C2E-C10	140M-D8E-C10	140M-F8E-C10	–
20BD014	1	10	7.5	12.5	10.4	14	16.5	22	17.5	30	17.5	50	50	20	140M-C2E-C16	140M-D8E-C16	140M-F8E-C16	–
20BD022	1	15	10	19.9	16.6	22	24.2	33	25	50	25	80	80	30	140M-C2E-C25	140M-D8E-C20	140M-F8E-C25	140M-CMN-2500
20BD027	2	20	15	24.8	20.6	27	33	44	35	60	35	100	100	50	–	–	140M-F8E-C32	140M-CMN-4000
20BD034	2	25	20	31.2	25.9	34	40.5	54	40	70	40	125	125	50	–	–	140M-F8E-C45	140M-CMN-4000
20BD040	3	30	25	36.7	30.5	40	51	68	50	90	50	150	150	50	–	–	140M-F8E-C45	140M-CMN-4000
20BD052	3	40	30	47.7	39.7	52	60	80	60	110	60	200	200	70	–	–	–	140M-CMN-6300

See [page A-4](#) for Notes.

Notes:

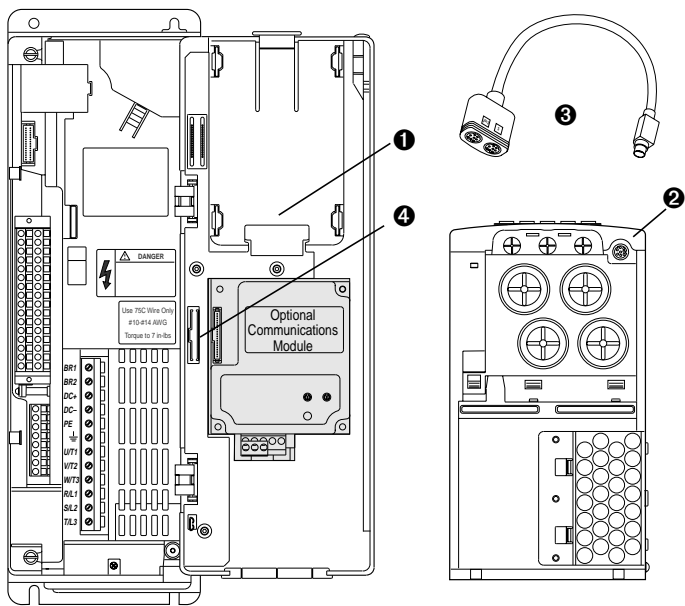
- (1) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
- (2) Maximum protection device size is the highest rated device that supplies drive protection.
- (3) Circuit Breaker - inverse time breaker.
- (4) Motor Circuit Protector - instantaneous trip circuit breaker.
- (5) Bulletin 140M with adjustable current range should have the current trip set to the minimum range that the device will not trip.
- (6) Manual Self-Protected (Type E) Combination Motor Controller, U.L. installation only for 480Y/277 distribution systems.
- (7) The AIC ratings of the Bulletin 140M Motor Protector may vary without testing. See publication 140M-SG001B-EN-P.

HIM Overview

For information on . .	See page . .	For information on . .	See page . .
External and Internal Connections	B-1	Menu Structure	B-3
LCD Display Elements	B-2	Viewing and Editing Parameters	B-5
ALT Functions	B-2	Removing the HIM	B-6

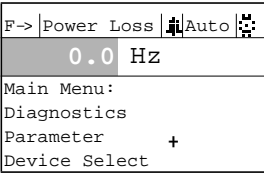
External and Internal Connections

The PowerFlex 700 provides a number of cable connection points (0 Frame shown).



No.	Connector	Description
1	DPI Port 1	HIM connection when installed in cover.
2	DPI Port 2	Cable connection for handheld and remote options.
3	DPI Port 3 or 2	Splitter cable connected to DPI Port 2 provides additional port.
4	DPI Port 5	Cable connection for communications adapter.









LCD Display Elements

Display	Description
	Direction Drive Status Alarm Auto/Man Information
	Commanded or Output Frequency
	Programming / Monitoring / Troubleshooting

ALT Functions

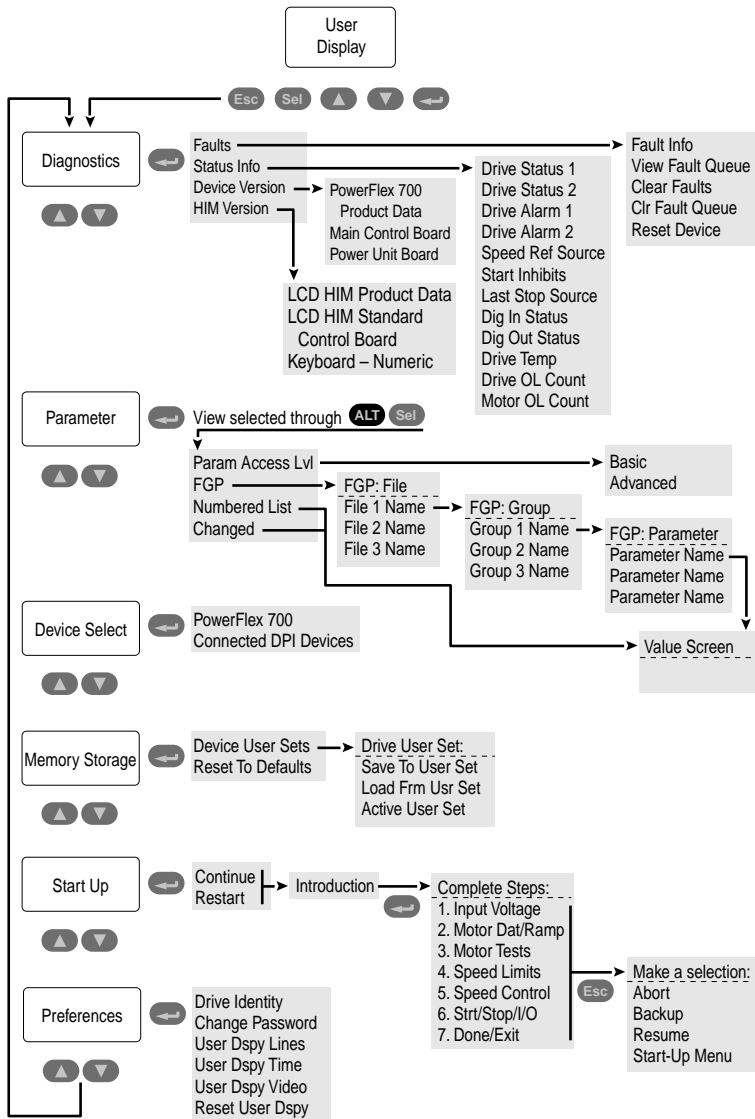
To use an ALT function, press the ALT key, release it, then press the programming key associated with one of the following functions:

Table B.A ALT Key Functions

ALT Key and then ...		Performs this function ...
		S.M.A.R.T. Displays the S.M.A.R.T. screen.
		View Allows the selection of how parameters will be viewed or detailed information about a parameter or component.
		Lang Displays the language selection screen.
		Auto / Man Switches between Auto and Manual Modes.
		Remove Allows HIM removal without causing a fault if the HIM is not the last controlling device and does not have Manual control of the drive.
		Exp Allows value to be entered as an exponent. (Not available on PowerFlex 700.)
		Param # Allows entry of a parameter number for viewing/editing.

Menu Structure

Figure B.1 HIM Menu Structure



Press **▲ ▼** to move between menu items

Press **←** to select a menu item

Press **Esc** to move 1 level back in the menu structure

Press **ALT Sel** to select how to view parameters

Diagnostics Menu

When a fault trips the drive, use this menu to access detailed data about the drive.

Option	Description
Faults	View fault queue or fault information, clear faults or reset drive.
Status Info	View parameters that display status information about the drive.
Device Version	View the firmware version and hardware series of components.
HIM Version	View the firmware version and hardware series of the HIM.

Parameter Menu

Refer to [Viewing and Editing Parameters on page B-5](#).

Device Select Menu

Use this menu to access parameters in connected peripheral devices.

Memory Storage Menu⁽¹⁾

Drive data can be saved to, or recalled from, User and HIM sets.

User sets are files stored in permanent nonvolatile drive memory.

HIM sets are files stored in permanent nonvolatile HIM memory.

Option	Description
HIM Copycat	Save data to a HIM set, load data from a HIM set to active drive memory or delete a HIM set.
Device User Sets	Save data to a User set, load data from a User set to active drive memory or name a User set.
Reset To Defaults	Restore the drive to its factory-default settings.

Start Up Menu

See [Chapter 2](#).

Preferences Menu

The HIM and drive have features that you can customize.















Option	Description
Drive Identity	Add text to identify the drive.
Change Password	Enable/disable or modify the password.
User Dspy Lines	Select the display, parameter, scale and text for the User Display. The User Display is two lines of user-defined data that appears when the HIM is not being used for programming.
User Dspy Time	Set the wait time for the User Display or enable/disable it.
User Dspy Video	Select Reverse or Normal video for the Frequency and User Display lines.
Reset User Dspy	Return all the options for the User Display to factory default values.

⁽¹⁾ HIM Copycat option not available at time of printing.

The PowerFlex 700 drive is initially set to Basic Parameter View. To view all parameters, set parameter 196 [Param Access Lvl] to option 1 “Advanced”. Parameter 196 is not affected by the Reset to Defaults function.

Viewing and Editing Parameters

LCD HIM

Step	Key(s)	Example Displays
1. In the Main Menu, press the Up Arrow or Down Arrow to scroll to “Parameter.”	 or 	
2. Press Enter. “FGP File” appears on the top line and the first three files appear below it.		<div> <div>FGP: File</div> <div>Monitor</div> <div>Motor Control</div> <div>Speed Reference</div> </div>
3. Press the Up Arrow or Down Arrow to scroll through the files.	 or 	
4. Press Enter to select a file. The groups in the file are displayed under it.		<div> <div>FGP: Group</div> <div>Motor Data</div> <div>Torq Attributes</div> <div>Volts per Hertz</div> </div>
5. Repeat steps 3 and 4 to select a group and then a parameter. The parameter value screen will appear.		<div> <div>FGP: Parameter</div> <div>Maximum Voltage</div> <div>Maximum Freq</div> <div>Compensation</div> </div>
6. Press Enter to enter edit mode.		
7. Press the Up Arrow or Down Arrow to change the value. If desired, press Sel to move from digit to digit, letter to letter, or bit to bit. The digit or bit that you can change will be highlighted.	 or  	<div> <div>FGP: Par 55</div> <div>Maximum Freq</div> <div>60.00 Hz</div> <div>25 <> 400.00</div> </div>
8. Press Enter to save the value. If you want to cancel a change, press Esc.		
9. Press the Up Arrow or Down Arrow to scroll through the parameters in the group, or press Esc to return to the group list.	 or  	<div> <div>FGP: Par 55</div> <div>Maximum Freq</div> <div>90.00 Hz</div> <div>25 <> 400.00</div> </div>



Numeric Keypad Shortcut

If using a HIM with a numeric keypad, press the ALT key and the +/- key to access the parameter by typing its number.

Removing the HIM

The HIM can be removed while the drive is powered. Normally, the drive issues a fault when the HIM is removed because it detects that a device is missing.

Important: HIM removal is only permissible in Auto mode. If the HIM is removed while in Manual mode or the HIM is the only remaining control device, a fault will occur.

Step	Key(s)	Example Displays
To remove the HIM . . . 1. Press ALT and then Enter (Remove). The Remove HIM confirmation screen appears. 2. Press Enter to confirm that you want to remove the HIM. 3. Remove the HIM from the drive.	 + 	<div>Remove Op Intrfc: Press Enter to Disconnect Op Intrfc? (Port 1 Control)</div>
To install the HIM . . . 1. Remove power to the drive. Connect HIM. Important: If you try to reconnect the HIM to a running drive, the drive will fault.		

A

- AC Input
 - Circuit Breakers, **A-1**
 - Ground, **1-3**
 - Line Fuses, **A-1**
- AC Supply
 - Source, **1-2**
 - Unbalanced, **1-2**
 - Ungrounded, **1-2**
- Accel Mask, **3-32**
- Accel Owner, **3-33**
- Accel Time x, **3-18**
- Access Panel Removal, **1-6**
- Alarm & Fault Types, **4-1**
- Alarm 1 @ Fault, **3-28**
- Alarm 2 @ Fault, **3-28**
- Alarm Clear, **3-30**
- Alarm Config 1, **3-30**
- Alarm Descriptions, **4-8**
- Alarm x Code, **3-30**
- Alarms
 - Analog in Loss, **4-8**
 - Bipolar Conflict, **4-8**
 - Decel Inhibit, **4-8**
 - Dig In Conflict, **4-8**
 - Drive OL Level, **4-8**
 - FluxAmpsRef Rang, **4-9**
 - IntDBRes OvrHeat, **4-9**
 - IR Volts Range, **4-9**
 - Ixo Vlt Rang, **4-9**
 - MaxFreq Conflict, **4-9**
 - Motor Type Cfct, **4-9**
 - NP Hz Conflict, **4-9**
 - Power Loss, **4-9**
 - Precharge Active, **4-9**
 - Sleep Config, **4-9**
 - Speed Ref Cfct, **4-9**
 - Start At PowerUp, **4-9**
 - UnderVoltage, **4-9**
 - VHz Neg Slope, **4-9**
 - Waking, **4-9**
- Alarms Group, **3-30**
- Alarms, Clearing, **4-7**
- ALT Key
 - Functions, **B-2**
- ALT Key Functions, **B-2**
- Ambient Temperature, **1-2**
- Analog in Loss Alarm, **4-8**
- Analog In Loss Fault, **4-4**
- Analog In x Hi, **3-35**
- Analog In x Lo, **3-35**
- Analog Inputs Group, **3-35**
- Analog Inx Value, **3-9**
- Analog Out1 Hi, **3-36**
- Analog Out1 Lo, **3-36**
- Analog Out1 Sel, **3-36**
- Analog Outputs Group, **3-36**
- Anlg Cal Chksum Fault, **4-4**
- Anlg In Config, **3-35**
- Anlg In Loss, **3-35**
- Anlg In Sqr Root, **3-35**
- Anlg Out Absolut, **3-36**
- Anlg Out Config, **3-36**
- Armored Cable, **1-5**
- Assisted Start Up, **2-3**
- Auto Mode, **1-13**
- Auto Rstrt Delay, **3-20**
- Auto Rstrt Tries, **3-20**
- Auto Rstrt Tries Fault, **4-4**
- Auto/Manual
 - Control, **1-14**
 - Modes, **1-13**
- Auto-Reset/Start, **4-1**
- Autotune, **3-11**
- AutoTune Aborted Fault, **4-4**
- Auxiliary Input Fault, **4-4**

B

- Before Applying Power, **2-1**
- Bipolar Conflict Alarm, **4-8**
- Bipolar Inputs, **1-9**
- Bottom Plate Removal, **1-6**

- Break Frequency, **3-12**
- Break Voltage, **3-12**
- Bus Capacitors, Discharging, **P-3**
- Bus Reg Kd, **3-20**
- Bus Reg Ki, **3-19**
- Bus Reg Kp, **3-20**
- Bus Reg Mode A, **3-19**
- Bus Reg Mode B, **3-19**

C

- Cable Entry Plate
 - Removal, **1-6**
 - SHLD Terminal, **1-4**
- Cable Length
 - Motor, **1-6**
- Cable Trays, **1-6**
- Cables, Power
 - Armored, **1-5**
 - Insulation, **1-5**
 - Separation, **1-5**
 - Shielded, **1-5**
 - Type, **1-5**
 - Unshielded, **1-5**
- Capacitors
 - Bus, Discharging, **P-3**
- Cassette, I/O, **1-10**
- Catalog Number Explanation, **P-4**
- CE
 - Conformity, **1-16**
 - Requirements, **1-17**
- Checklist, Start-Up, **2-1**
- Circuit Breakers, Input, **1-4**
- Clear Fault Owner, **3-33**
- Clearing Alarms, **4-7**
- Clearing Faults, **4-3**
- Comm Control Group, **3-31**
- Command Freq, **3-8**
- Common Mode Capacitors, **1-15**
- Common Mode Interference, **1-9**
- Common Symptoms and Corrective Action, **4-10**
- Communication File, **3-31**
- Compensation, **3-10**

- Conduit, **1-6**
- Contactors
 - Input, **1-8**
 - Output, **A-1**
- Control SW Ver, **3-9**
- Control Wire, **1-9**
- Control, Auto/Manual, **1-14**
- Conventions, Manual, **P-2**
- Cover, Opening, **1-1**
- Cross Reference, Parameter
 - by Name, **3-39**
 - by Number, **3-41**
- Current Lmt Gain, **3-18**
- Current Lmt Sel, **3-18**
- Current Lmt Val, **3-18**

D

- Data In Ax, **3-34**
- Data Out Ax, **3-34**
- Data, Diagnostic, **B-4**
- Data, Saving, **B-4**
- Datalinks Group, **3-34**
- DB Resistance Fault, **4-4**
- DB Resistor Type, **3-20**
- DC Brake Level, **3-19**
- DC Brake Time, **3-19**
- DC Brk Lvl Sel, **3-19**
- DC Bus Memory, **3-8**
- DC Bus Voltage, **3-8**
- Decel Inhibit Fault, **4-4**
- Decel Inhibit Alarm, **4-8**
- Decel Mask, **3-32**
- Decel Owner, **3-33**
- Decel Time x, **3-18**
- Diagnostic Data, Viewing, **B-4**
- Diagnostics Group, **3-24**
- Dig In Conflict Alarm, **4-8**
- Dig In Status, **3-26**
- Dig Out Status, **3-26**
- Dig Outx Level, **3-38**
- Dig Outx OffTime, **3-38**
- Dig Outx OnTime, **3-38**

Digital Inputs Group, **3-37**
 Digital Inx Sel, **3-37**
 Digital Outputs Group, **3-37**
 Digital Outx Sel, **3-38**
 Dimensions
 Minimum Clearances, **1-2**
 Mounting, **P-1**
 Direction Mask, **3-32**
 Direction Mode, **3-22**
 Direction Owner, **3-33**
 Discrete Speeds Group, **3-14**
 Distribution Systems
 Unbalanced, **1-2**
 Ungrounded, **1-2**
 DPI Comm Loss Fault, **4-6**
 DPI Data Rate, **3-31**
 DPI Port 1-6 Fault, **4-6**
 DPI Port Locations, **B-1**
 Drive Alarm 1, **3-25**
 Drive Alarm 2, **3-25**
 Drive Checksum, **3-24**
 Drive Data Group, **3-9**
 Drive Frame Size, **P-3**
 Drive Grounding, **1-3**
 Drive Logic Rslt, **3-31**
 Drive OL Count, **3-27**
 Drive OL Level Alarm, **4-8**
 Drive OL Mode, **3-18**
 Drive Overload Fault, **4-4**
 Drive Ramp Rslt, **3-31**
 Drive Ratings, **A-1**
 Drive Ref Rslt, **3-31**
 Drive Status 1, **3-24**
 Drive Temp, **3-26**
 DriveExplorer, **3-1**
 DriveTools, **3-1**
 Dynamic Brake Resistor Selection, **3-20**
 Dynamic Control File, **3-18**

E

Earthing, *see* **Grounding**

Editing Parameters, **3-1**
 Elapsed MWH, **3-8**
 Elapsed Run Time, **3-8**
 EMC
 Directive, **1-16**
 Instructions, **1-16**
 EMI/RFI Filter Grounding, RFI Filter, **1-4**
 Enclosure Rating, **1-2**
 Encoder Terminal Block, **1-10**
 ESD, Static Discharge, **P-3**
 Excessive Load Fault, **4-4**

F

Fault & Alarm Types, **4-1**
 Fault 1 Time, **3-29**
 Fault Amps, **3-27**
 Fault Bus Volts, **3-27**
 Fault Clear, **3-28**
 Fault Clear Mode, **3-29**
 Fault Clr Mask, **3-32**
 Fault Config x, **3-28**
 Fault Descriptions, **4-4**
 Fault Frequency, **3-27**
 Fault x Code, **3-29**
 Faults
 Analog In Loss, **4-4**
 Anlg Cal Chksum, **4-4**
 Auto Rstrt Tries, **4-4**
 AutoTune Aborted, **4-4**
 Auxiliary Input, **4-4**
 DB Resistance, **4-4**
 Decel Inhibit, **4-4**
 DPI Comm Loss, **4-6**
 DPI Port 1-6, **4-6**
 Drive Overload, **4-4**
 Excessive Load, **4-4**
 FluxAmpsRef Rang, **4-4**
 Ground Fault, **4-4**
 Heatsink OvrTemp, **4-5**
 HW OverCurrent, **4-5**
 Incompat MCB-PB, **4-5**
 IR Volts Range, **4-5**
 Motor Overload, **4-5**

- OverSpeed Limit, **4-5**
- OverVoltage, **4-5**
- Parameter Chksum, **4-5**
- Params Defaulted, **4-5**
- Phase Short, **4-5**
- Phase to Grnd, **4-5**
- Power Loss, **4-6**
- Power Unit, **4-6**
- Pwr Brd Chksum, **4-6**
- Pwr Brd Chksum2, **4-6**
- Replaced MCB-PB, **4-6**
- Shear Pin, **4-6**
- SW OverCurrent, **4-6**
- Trnsistr OvrTemp, **4-7**
- UnderVoltage, **4-7**
- UserSet Chksum, **4-7**
- Faults Group, **3-28**
- Faults, Clearing, **4-3**
- FGP, **3-3**
- File
 - Communication, **3-31**
 - Dynamic Control, **3-18**
 - Inputs & Outputs, **3-35**
 - Monitor, **3-8**
 - Motor Control, **3-9**
 - Speed Command, **3-12**
 - Utility, **3-22**
- File-Group-Parameter, **3-3**
- Filter, RFI, **1-4**
- First Environment Installations, **1-17**
- Flux Current, **3-8**
- Flux Current Ref, **3-11**
- Flux Up Mode, **3-10**
- Flux Up Time, **3-11**
- FluxAmpsRef Rang Alarm, **4-9**
- FluxAmpsRef Rang Fault, **4-4**
- Flying Start En, **3-20**
- Flying Start Gain, **3-20**
- Frame Designations, **A-1**
- Frame Size, Drive, **P-3**
- Functions, ALT Key, **B-2**
- Fuses
 - Input, **1-4**
 - Ratings, **A-1**

G

- General Precautions, **P-3**
- Ground Fault, **4-4**
- Grounding
 - Bus, **1-3**
 - Conductor, **1-3**
 - Filter, **1-4**
 - General, **1-3**
 - Impedance, **1-3**
 - Safety, PE, **1-3**
 - Shields, **1-4**
- Group
 - Alarms, **3-30**
 - Analog Inputs, **3-35**
 - Analog Outputs, **3-36**
 - Comm Control, **3-31**
 - Datalinks, **3-34**
 - Diagnostics, **3-24**
 - Digital Inputs, **3-37**
 - Digital Outputs, **3-37**
 - Discrete Speeds, **3-14**
 - Drive Data, **3-9**
 - Faults, **3-28**
 - HIM Config, **3-22**
 - Load Limits, **3-18**
 - Masks & Owners, **3-32**
 - Metering, **3-8**
 - MOP Config, **3-23**
 - Motor Data, **3-9**
 - Power Loss, **3-22**
 - Process PI, **3-16**
 - Ramp Rates, **3-18**
 - Restart Modes, **3-20**
 - Slip Comp, **3-15**
 - Spd Mode & Limits, **3-12**
 - Speed References, **3-13**
 - Speed Trim, **3-15**
 - Stop/Brake Modes, **3-19**
 - Volts per Hertz, **3-12**

H

- Heatsink OvrTemp Fault, **4-5**
- HIM Config Group, **3-22**
- HIM Menu Structure, **B-4**

HIM, Removing, **B-6**
 HW OverCurrent Fault, **4-5**

I

I/O

Cassette, **1-10**
 Standard, **1-8**
 Terminal Block, **1-10**
 Incompat MCB-PB Fault, **4-5**
 Input Contactor
 Start/Stop, **1-8**
 Input Devices
 Circuit Breakers, **1-4**
 Contactors, **1-8**
 Fuses, **1-4**
 Input Fusing, **1-4**
 Input Potentiometer, **1-12**
 Input Power Conditioning, **1-3**
 Inputs & Outputs File, **3-35**
 Installation, **1-1**
 IntDBRes OvrHeat Alarm, **4-9**
 IR Voltage Drop, **3-11**
 IR Volts Range Alarm, **4-9**
 IR Volts Range Fault, **4-5**
 Ixo Vlt Rang Alarm, **4-9**
 Ixo Voltage Drop, **3-12**

J

Jog Mask, **3-32**
 Jog Owner, **3-33**
 Jog Speed, **3-14**

L

Language, **3-24**
 Last Stop Source, **3-26**
 LCD HIM
 Menus, **B-4**
 LEDs, **4-2**
 Linear List, **3-3**
 Load Frm Usr Set, **3-23**
 Load Limits Group, **3-18**

Local Mask, **3-32**
 Local Owner, **3-33**
 Logic Mask, **3-32**
 Low Voltage Directive, **1-16**

M

Man Ref Preload, **3-22**
 Manual Conventions, **P-2**
 Manual Mode, **1-13**
 Manual/Auto Control, **1-14**
 Masks & Owners Group, **3-32**
 MaxFreq Conflict Alarm, **4-9**
 Maximum Freq, **3-10**
 Maximum Speed, **3-12**
 Maximum Voltage, **3-10**
 Menu Structure, HIM, **B-4**
 Metering Group, **3-8**
 Minimum Clearances, **1-2**
 Minimum Speed, **3-12**
 MOD LED, **4-2**
 Modes, Auto/Manual, **1-13**
 Monitor File, **3-8**
 MOP Config Group, **3-23**
 MOP Frequency, **3-8**
 MOP Mask, **3-32**
 MOP Owner, **3-33**
 MOP Rate, **3-23**
 Motor Cable Lengths, **1-6**
 Motor Control File, **3-9**
 Motor Data Group, **3-9**
 Motor NP FLA, **3-9**
 Motor NP Hertz, **3-9**
 Motor NP Power, **3-9**
 Motor NP RPM, **3-9**
 Motor NP Volts, **3-9**
 Motor OL Count, **3-27**
 Motor OL Factor, **3-10**
 Motor OL Hertz, **3-10**
 Motor Overload Fault, **4-5**
 Motor Type, **3-9**
 Motor Type Cflict Alarm, **4-9**
 Mounting

Clearances, **1-2**
Orientation, **1-2**
MOVs, **1-15**
Mtr NP Pwr Units, **3-10**

N

NET LED, **4-2**
Non-Resettable, **4-1**
NP Hz Conflict Alarm, **4-9**

O

Opening the Cover, **1-1**
Operating Modes, **1-13**
Operating Temperature, **1-2**
Operator Interface, **B-5**
Output Current, **3-8**
Output Devices
 Cable Terminators, **A-1**
 Common Mode Cores, **A-1**
 Contactors, **A-1**
Output Freq, **3-8**
Output Power, **3-8**
Output Powr Fctr, **3-8**
Output Voltage, **3-8**
Overspeed Limit, **3-13**
OverSpeed Limit Fault, **4-5**
OverVoltage Fault, **4-5**

P

Param Access Lvl, **3-23**
Parameter
 Changing/Editing, **B-5**
 Descriptions, **3-1**
 File-Group-Parameter
 Organization, **3-3**
 Linear List, **3-3**
 Viewing, **B-5**
Parameter Chksum Fault, **4-5**
Parameter Cross Reference
 by Name, **3-39**
 by Number, **3-41**
Parameters

Accel Mask, **3-32**
Accel Owner, **3-33**
Accel Time x, **3-18**
Alarm 1 @ Fault, **3-28**
Alarm 2 @ Fault, **3-28**
Alarm Clear, **3-30**
Alarm Config 1, **3-30**
Alarm x Code, **3-30**
Analog In x Hi, **3-35**
Analog In x Lo, **3-35**
Analog Inx Value, **3-9**
Analog Out1 Hi, **3-36**
Analog Out1 Lo, **3-36**
Analog Out1 Sel, **3-36**
Anlg In Config, **3-35**
Anlg In Loss, **3-35**
Anlg In Sqr Root, **3-35**
Anlg Out Absolut, **3-36**
Anlg Out Config, **3-36**
Auto Rstrt Delay, **3-20**
Auto Rstrt Tries, **3-20**
Autotune, **3-11**
Break Frequency, **3-12**
Break Voltage, **3-12**
Bus Reg Kd, **3-20**
Bus Reg Ki, **3-19**
Bus Reg Kp, **3-20**
Bus Reg Mode A, **3-19**
Bus Reg Mode B, **3-19**
Clear Fault Owner, **3-33**
Command Freq, **3-8**
Compensation, **3-10**
Control SW Ver, **3-9**
Current Lmt Gain, **3-18**
Current Lmt Sel, **3-18**
Current Lmt Val, **3-18**
Data In Ax, **3-34**
Data Out Ax, **3-34**
DB Resistor Type, **3-20**
DC Brake Level, **3-19**
DC Brake Time, **3-19**
DC Brk Lvl Sel, **3-19**
DC Bus Memory, **3-8**
DC Bus Voltage, **3-8**
Decel Mask, **3-32**
Decel Owner, **3-33**

- Decel Time x, 3-18
- Dig In Status, 3-26
- Dig Out Status, 3-26
- Dig Outx Level, 3-38
- Dig Outx OffTime, 3-38
- Dig Outx OnTime, 3-38
- Digital Inx Sel, 3-37
- Digital Outx Sel, 3-38
- Direction Mask, 3-32
- Direction Mode, 3-22
- Direction Owner, 3-33
- DPI Data Rate, 3-31
- Drive Alarm 1, 3-25
- Drive Alarm 2, 3-25
- Drive Checksum, 3-24
- Drive Logic Rslt, 3-31
- Drive OL Count, 3-27
- Drive OL Mode, 3-18
- Drive Ramp Rslt, 3-31
- Drive Ref Rslt, 3-31
- Drive Status 1, 3-24
- Drive Temp, 3-26
- Elapsed MWH, 3-8
- Elapsed Run Time, 3-8
- Fault 1 Time, 3-29
- Fault Amps, 3-27
- Fault Bus Volts, 3-27
- Fault Clear, 3-28
- Fault Clear Mode, 3-29
- Fault Clr Mask, 3-32
- Fault Config x, 3-28
- Fault Frequency, 3-27
- Fault x Code, 3-29
- Flux Current, 3-8
- Flux Current Ref, 3-11
- Flux Up Mode, 3-10
- Flux Up Time, 3-11
- Flying Start En, 3-20
- Flying Start Gain, 3-20
- IR Voltage Drop, 3-11
- Ixo Voltage Drop, 3-12
- Jog Mask, 3-32
- Jog Owner, 3-33
- Jog Speed, 3-14
- Language, 3-24
- Last Stop Source, 3-26
- Load Frm Usr Set, 3-23
- Local Mask, 3-32
- Local Owner, 3-33
- Logic Mask, 3-32
- Man Ref Preload, 3-22
- Maximum Freq, 3-10
- Maximum Speed, 3-12
- Maximum Voltage, 3-10
- Minimum Speed, 3-12
- MOP Frequency, 3-8
- MOP Mask, 3-32
- MOP Owner, 3-33
- MOP Rate, 3-23
- Motor NP FLA, 3-9
- Motor NP Hertz, 3-9
- Motor NP Power, 3-9
- Motor NP RPM, 3-9
- Motor NP Volts, 3-9
- Motor OL Count, 3-27
- Motor OL Factor, 3-10
- Motor OL Hertz, 3-10
- Motor Type, 3-9
- Mtr NP Pwr Units, 3-10
- Output Current, 3-8
- Output Freq, 3-8
- Output Power, 3-8
- Output Powr Fctr, 3-8
- Output Voltage, 3-8
- Overspeed Limit, 3-13
- Param Access Lvl, 3-23
- PI Configuration, 3-16
- PI Control, 3-16
- PI Error Meter, 3-17
- PI Fdbck Meter, 3-17
- PI Feedback Sel, 3-17
- PI Integral Time, 3-17
- PI Lower Limit, 3-17
- PI Output Meter, 3-17
- PI Preload, 3-17
- PI Prop Gain, 3-17
- PI Ref Meter, 3-17
- PI Reference Sel, 3-16
- PI Setpoint, 3-17
- PI Status, 3-17
- PI Upper Limit, 3-17
- Power Loss Level, 3-22

Power Loss Mode, 3-22
Power Loss Time, 3-22
PowerUp Marker, 3-29
Preset Speed x, 3-15
PWM Frequency, 3-18
Rated Amps, 3-9
Rated kW, 3-9
Rated Volts, 3-9
Reference Mask, 3-32
Reference Owner, 3-33
Reset Meters, 3-23
Reset To Defaults, 3-23
Run Boost, 3-12
S Curve %, 3-18
Save HIM Ref, 3-22
Save MOP Ref, 3-23
Save To User Set, 3-23
Skip Freq Band, 3-13
Skip Frequency x, 3-13
Sleep Level, 3-21
Sleep Time, 3-21
Sleep-Wake Mode, 3-21
Sleep-Wake Ref, 3-21
Slip Comp Gain, 3-15
Slip RPM @ FLA, 3-15
Slip RPM Meter, 3-16
Speed Mode, 3-12
Speed Ref A Hi, 3-14
Speed Ref A Lo, 3-14
Speed Ref A Sel, 3-13
Speed Ref B Hi, 3-14
Speed Ref B Lo, 3-14
Speed Ref B Sel, 3-14
Speed Ref Source, 3-25
Start At PowerUp, 3-20
Start Inhibits, 3-26
Start Mask, 3-32
Start Owner, 3-33
Start/Acc Boost, 3-12
Status 1 @ Fault, 3-27
Stop Mode x, 3-19
Stop Owner, 3-33
SV Boost Filter, 3-11
TB Man Ref Hi, 3-14
TB Man Ref Lo, 3-14
TB Man Ref Sel, 3-14
Testpoint 1 Sel, 3-28
Testpoint x Data, 3-28
Torque Current, 3-8
Torque Perf Mode, 3-10
Trim Hi, 3-15
Trim In Select, 3-15
Trim Lo, 3-15
Trim Out Select, 3-15
Voltage Class, 3-2, 3-24
Wake Level, 3-21
Wake Time, 3-21
Params Defaulted Fault, 4-5
PE Ground, 1-3
Phase Short Fault, 4-5
Phase to Grnd Fault, 4-5
PI Configuration, 3-16
PI Control, 3-16
PI Error Meter, 3-17
PI Fdback Meter, 3-17
PI Feedback Sel, 3-17
PI Integral Time, 3-17
PI Lower Limit, 3-17
PI Output Meter, 3-17
PI Preload, 3-17
PI Prop Gain, 3-17
PI Ref Meter, 3-17
PI Reference Sel, 3-16
PI Setpoint, 3-17
PI Status, 3-17
PI Upper Limit, 3-17
PORT LED, 4-2
Ports, DPI Type, B-1
Potentiometer, Wiring, 1-12
Power Cables/Wiring, 1-5
Power Conditioning, Input, 1-3
Power Loss Alarm, 4-9
Power Loss Fault, 4-6
Power Loss Group, 3-22
Power Loss Level, 3-22
Power Loss Mode, 3-22
Power Loss Time, 3-22
Power Terminal Block, 1-7
Power Unit Fault, 4-6

Power Wiring
 Access Panel, **1-6**
 General, **1-6**
 PowerFlex 700 Reference Manual,
 P-1
 Powering Up the Drive, **2-1**
 PowerUp Marker, **3-29**
 Precautions, General, **P-3**
 Precharge Active Alarm, **4-9**
 Preferences, Setting, **B-4**
 Preset Speed x, **3-15**
 Process PI Group, **3-16**
 Programming, **3-1**
 Publications, Reference, **P-2**
 PWM Frequency, **3-18**
 Pwr Brd Chksum Fault, **4-6**
 Pwr Brd Chksum2, **4-6**
 PWR LED, **4-2**

R

Ramp Rates Group, **3-18**
 Rated Amps, **3-9**
 Rated kW, **3-9**
 Rated Volts, **3-9**
 Ratings, Drive, **A-1**
 Reference Manual, **P-1**
 Reference Mask, **3-32**
 Reference Material, **P-2**
 Reference Owner, **3-33**
 Removing Cover, **1-1**
 Repeated Start/Stop, **1-8**
 Replaced MCB-PB Fault, **4-6**
 Reset Meters, **3-23**
 Reset To Defaults, **3-23**
 Restart Modes Group, **3-20**
 Run Boost, **3-12**

S

S Curve %, **3-18**
 S.M.A.R.T. Start Up, **2-3**
 Safety Ground, **1-3**
 Save HIM Ref, **3-22**

Save MOP Ref, **3-23**
 Save To User Set, **3-23**
 Saving Data, Viewing, **B-4**
 Setting Preferences, **B-4**
 Shear Pin Fault, **4-6**
 Shielded Cables
 Power, **1-5**
 SHLD Terminal, **1-4**
 Short Circuit Protection, **1-4**
 Signal Wire, **1-9**
 Skip Freq Band, **3-13**
 Skip Frequency x, **3-13**
 Sleep Config Alarm, **4-9**
 Sleep Level, **3-21**
 Sleep Time, **3-21**
 Sleep-Wake Mode, **3-21**
 Sleep-Wake Ref, **3-21**
 Slip Comp Gain, **3-15**
 Slip Comp Group, **3-15**
 Slip RPM @ FLA, **3-15**
 Slip RPM Meter, **3-16**
 Spare Parts, **P-1**
 Spd Mode & Limits Group, **3-12**
 Specifications
 Drive, **P-1**
 Drive Ratings, **A-1**
 Speed Command File, **3-12**
 Speed Command Sources, **1-13**
 Speed Mode, **3-12**
 Speed Pot, **1-12**
 Speed Ref A Hi, **3-14**
 Speed Ref A Lo, **3-14**
 Speed Ref A Sel, **3-13**
 Speed Ref B Hi, **3-14**
 Speed Ref B Lo, **3-14**
 Speed Ref B Sel, **3-14**
 Speed Ref Cflct Alarm, **4-9**
 Speed Ref Source, **3-25**
 Speed Reference Control, **1-13**
 Speed Reference Selection, **1-13**
 Speed References Group, **3-13**
 Speed Trim Group, **3-15**
 Standard I/O

TB, **1-10**
 Wiring, **1-8**
 Start At PowerUp, **3-20**
 Start At PowerUp Alarm, **4-9**
 Start Inhibits, **3-26**
 Start Mask, **3-32**
 Start Owner, **3-33**
 Start/Acc Boost, **3-12**
 Start/Stop, Repeated, **1-8**
 Start-Up
 Assisted, **2-3**
 Checklist, **2-1**
 S.M.A.R.T., **2-3**
 Static Discharge, ESD, **P-3**
 Status 1 @ Fault, **3-27**
 Status LEDs, **4-2**
 Stop Mode x, **3-19**
 Stop Owner, **3-33**
 Stop/Brake Modes Group, **3-19**
 STS LED, **4-2**
 Supply Source, **1-2**
 SV Boost Filter, **3-11**
 SW OverCurrent Fault, **4-6**
 System Grounding, **1-3**

T

TB Man Ref Hi, **3-14**
 TB Man Ref Lo, **3-14**
 TB Man Ref Sel, **3-14**
 Terminal Block
 Encoder, **1-10**
 Power, **1-7**
 Standard I/O, **1-10**
 Wire Size
 Encoder, **1-10**
 I/O, **1-10**
 Power, **1-7**
 Testpoint 1 Sel, **3-28**
 Testpoint Codes and Functions, **4-10**
 Testpoint x Data, **3-28**
 Torque Current, **3-8**
 Torque Perf Mode, **3-10**
 Trim Hi, **3-15**

Trim In Select, **3-15**
 Trim Lo, **3-15**
 Trim Out Select, **3-15**
 Trnsistr OvrTemp Fault, **4-7**
 Troubleshooting, **4-1**

U

Unbalanced/Ungrounded Supply, **1-2**
 UnderVoltage
 Alarm, **4-9**
 Fault, **4-7**
 Ungrounded Distribution Systems,
 1-15
 Unshielded Power Cables, **1-5**
 User Configurable Alarm, **4-1**
 UserSet Chksum Fault, **4-7**
 Utility File, **3-22**

V

VHz Neg Slope Alarm, **4-9**
 Viewing and Changing Parameters,
 B-5
 Voltage Class, **3-2, 3-24**
 Volts per Hertz Group, **3-12**

W

Wake Level, **3-21**
 Wake Time, **3-21**
 Waking Alarm, **4-9**
 Web Sites, see *WWW, World Wide Web*
 Wire
 Control, **1-9**
 Signal, **1-9**
 Wiring, **1-1**
 Access Panel Removal, **1-6**
 Cable Entry Plate Removal, **1-6**
 I/O, **1-8**
 Potentiometer, **1-12**
 Power, **1-5**
 WWW, World Wide Web, **1-1, 1-2, P-1, P-2, Back-1**



To contact **Drives Technical Support** . . .
Tel: (1) 262 512-8176, Fax: (1) 262 512-2222
Email: support@drives.ra.rockwell.com
Online: www.ab.com/support/abdrives

Reach us now at www.rockwellautomation.com

Wherever you need us, Rockwell Automation brings together leading brands in industrial automation including Allen-Bradley controls, Reliance Electric power transmission products, Dodge mechanical power transmission components, and Rockwell Software. Rockwell Automation's unique, flexible approach to helping customers achieve a competitive advantage is supported by thousands of authorized partners, distributors and system integrators around the world.



Americas Headquarters, 1201 South Second Street, Milwaukee, WI 53201-2496, USA, Tel: (1) 414 382-2000, Fax: (1) 414 382-4444
European Headquarters SA/IV, Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific Headquarters, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

**Rockwell
Automation**